SCIENCE AND INDUSTRY

Manufacturers Record

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REFERENCE
DO NOT LOAN

SOUTH AMERICAN MARKETS

The exports of the United States to South America amount to $550,000,000 annually. Germany has been entering the South American market to the extent of $250,000,000.

Here is a large potential field open to United States manufacturers.

The map clearly shows the South's favorable position in any increase in South American trade with this country.

Two articles continuing the "Foreign Trade" series appear in this issue.

December 1939

SLOW DOWN ROPE WEAR!

A wire rope that reduces rope wear to a minimum—that provides maximum resistance against fatigue—Roebling "Blue Center" assures maximum rope operating economy. It is the highest achievement of Roebling's over 90 years of rope making experience! Ask about this rope—either standard or preformed.

JOHN A. ROEBLING'S SONS COMPANY, TRENTON, N.J.
BRANCHES IN PRINCIPAL CITIES

STRONGER—Wire of highest strength consistent with ductility and toughness

TOUGHER—Provides maximum resistance against wear, sudden shocks, vibration

SAFER—Unequalled for uniformity of quality

SAVING—Insures lowest general average operating cost

THE HIGHEST DEVELOPMENT IN ROEBLING WIRE ROPE

Reducing to a NEW LOW

The Cost of Grinding Cemented Carbide Tools . .

NORTON METAL BONDED DIAMOND WHEELS

HERE'S a diamond wheel that can really "take it"—a wheel so durable that it will outlast several resinoid bonded diamond wheels on the offhand grinding of single point cemented carbide tools—a wheel so strong that it resists grooving and rounding of the corners.

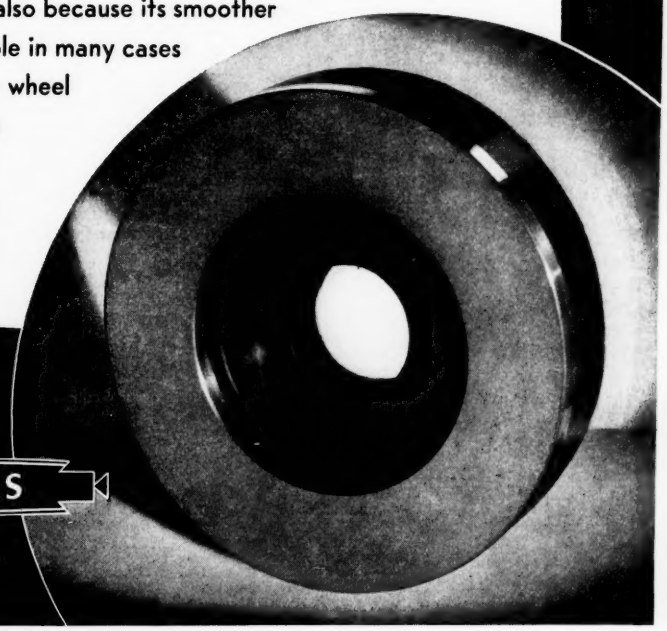
In this new Norton Metal Bonded Wheel the diamonds are actually imbedded in solid metal—a special alloy that holds the tiny diamond particles securely to resist the severe usage for which this wheel is specifically recommended.

Not only is this Norton Wheel cutting costs because of its long life and resistance to damage but also because its smoother grinding action makes it possible in many cases to recondition tools with one wheel instead of two separate wheels for roughing and finishing.

Full information upon request

NORTON COMPANY
Worcester, Mass.

W-727



NORTON ABRASIVES

When are THREE tanks better than ONE?

The answer is....When they are in Strategic Locations

The Jefferson Parish Waterworks District No. 2 supplies water for general service and fire protection in the residential and industrial districts of Harvey, Gretna and Marrero across the Mississippi river from New Orleans. Three Horton elevated water tanks, located strategically in the four sq. mi. served by the district, maintain uniform pressures throughout the entire area.

The three tanks have a combined capacity of 500,000 gals. Being located near centers of demand, they all serve their individual areas with ordinary distribution mains. Large transmission mains would be necessary to obtain the same effect with all of the storage at a central location.

When considering improvements in your waterworks system, calculate carefully not only the amount of elevated storage capacity required, but the best location for it. You may find it desirable to install two or even three tanks at different places in the system. Write our nearest office for estimating figures.

The locations of the three elevated water tanks in the Jefferson Parish Waterworks District No. 2 are shown on the above map. The numbers on the accompanying photos correspond with the tank locations.

(1) This 300,000-gal. ellipsoidal-bottom tank is the most recently installed, being completed early in 1939.

(2) 50,000-gal. hemispherical tank 125 ft. to bottom at the pumping station.

(3) 150,000-gal. ellipsoidal-bottom design near the lower end of the system. The latter two tanks were erected in 1931.

CHICAGO BRIDGE & IRON COMPANY

Birmingham .....1530 North Fiftieth Street	New York .....3313-165 Broadway Bldg.	Philadelphia .....1619-1700 Walnut Street Bldg.
Dallas .....1408 Liberty Bank Bldg.	Cleveland .....2216 Rockefeller Bldg.	Detroit .....1510 Lafayette Bldg.
Houston .....2919 Main Street	Chicago .....2106 Old Colony Bldg.	Boston .....1510 Consolidated Gas Bldg.
Tulsa .....1611 Hunt Bldg.	San Francisco .....1040 Rialto Bldg.	Havana .....Edificio Abreu 402

B-689

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

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MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

Published Monthly by the
MANUFACTURERS RECORD PUBLISHING CO.
FRANK GOULD, President

Main Office: Manufacturers Record Building, Commerce and Water Streets, Baltimore, Md. Phone: Plaza 7080-1.
Branch Offices: New York—11 W. 42nd St. Phone: Longacre 5-7180.
Chicago—28 East Jackson Blvd., Room 1510. Phone: Harrison 5867.
Cleveland, O.—850 Euclid Ave., Room 310. Phone: Cherry 4050.

Subscription Rates: One Year $2.00, Two Years $3.00. Single Copies 25c, back numbers over 3 months old 50c. Other Publications of the Manufacturers Record Publishing Co. Construction (daily and monthly issues) $10.00 a year. Construction (monthly issues only) $2.00 a year. Blue Book of Southern Progress (annual) $1.00 per copy.

Member A.B.C.

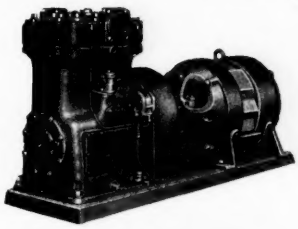
Entered as second class matter at the postoffice, Baltimore, Md., U.S.A., under act of March 3, 1879. Volume 108, Number 12 Monthly 4

Investigate!

AIR . . . COMPRESSORS by Westinghouse

AIR BRAKE CO.

For Varied Pneumatic Requirements



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(one of many types)

A rugged machine, two-cylinder, single-stage, water-cooled, continuous operation at 140 lbs. pressure. Forced feed lubricating system interlocked with unloader—Compresses air only when oil supply is adequate. Sizes 46 to 157 cu. ft. Complete outfit with motor, either direct or belt drive. Separate compressor unit also available for coupling or belt drive.

Write for information and prices.

Catalogue T-2055

Builders of high grade pneumatic apparatus for 70 years

Westinghouse . . . .

AIR BRAKE CO.

Industrial Division

PITTSBURGH, PA.

"PREVENTIVE MAINTENANCE keeps our piping costs down"

ACTUALLY, it's nothing new—many hundreds of plants are doing it every day. It's just a matter of using good foresight when you're buying valves and fittings.

Preventive Maintenance is simply this: It means fortifying your piping with extra resistance to the stress and strain of service conditions. There lies your greatest assurance of dependable flow control at minimum cost. And it means making sure that your piping equipment is right for the job to be done—right for the safety required.

Whether your plant is small or large—with Crane valves and fittings you can carry on a successful program of Preventive Maintenance. That's because in Crane-Quality you get the finest development of design and materials in flow-control equipment. And in the Crane line of over 38,000 items is exactly the one you need for efficient and economical piping in every application in your system.

Just as he has helped others, your Crane Representative will gladly work with you. Through him, Crane's vast experience in solving industry's piping problems is applied to your individual case. Back of him, at your service, are Crane's extensive resources of technical knowledge, Crane's elaborate research and plant facilities.

If you *now* have a piping problem that's giving you headaches, then get started *now* on a Preventive Maintenance program. You'll save many dollars—you'll have peace of mind. Call your Crane Representative today. He is ready to serve you.

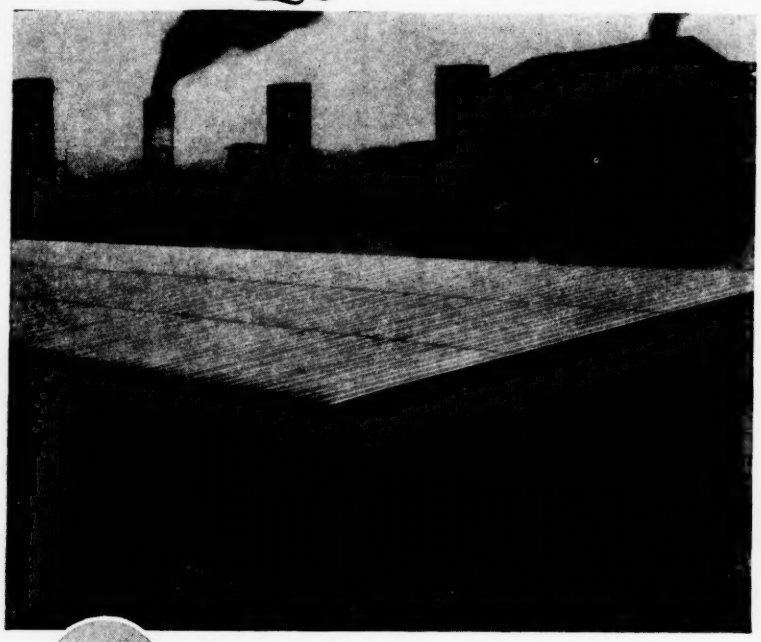
CRANE

CRANE CO., GENERAL OFFICES
836 S. MICHIGAN AVE., CHICAGO
VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

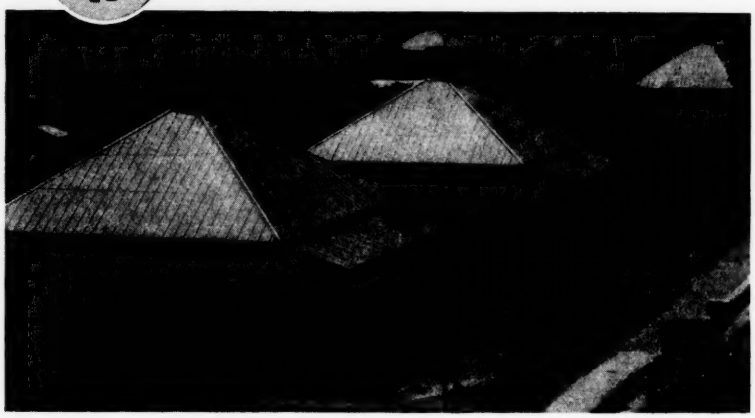
NATION-WIDE SERVICE THROUGH BRANCHES AND WHOLESALERS IN ALL MARKETS

Leaky Overhead?

Stop leaks and save money with **U·S·S TENNESEAL**—*the South's favorite steel roofing*

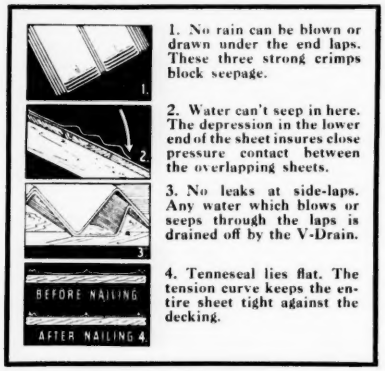


(Above)—*A large industrial storage shed with a roof of U·S·S Tenneseal Galvanized Steel Roofing.*
(Below)—*U·S·S Tenneseal Roofing is ideal for employee houses. While easily applied at low cost, it provides a leak-proof roof that is attractive in every respect.*



THERE'S no need to waste money on roofing with short life, high depreciation and expensive upkeep. For today, you can make first cost practically the last cost and in addition get full protection from rain and fire at amazingly low cost. Many southern plant owners are finding that U·S·S Tenneseal Galvanized Steel Roofing solves the problem of a long-life industrial roof, and saves money for them. Let's examine these advantages:

Low First Cost—Not only are Tenneseal Steel Sheets low in first cost, but they are also less expensive to apply. They can be laid over many types of existing roofs or over open roof decking.



1. No rain can be blown or drawn under the end laps. These three strong crimps block seepage.

2. Water can't seep in here. The depression in the lower end of the sheet insures close pressure contact between the overlapping sheets.

3. No leaks at side-laps. Any water which blows or seeps through the laps is drained off by the V-Drain.

4. Tenneseal lies flat. The tension curve keeps the entire sheet tight against the decking.

Lasts for Many Years—Every Tenneseal Roofing Sheet is galvanized with a smooth, even zinc coating that resists rust. The extra care we take in applying this galvanizing means extra roof life.

Ends Roof Leaks — Look at these Tenneseal features. You'll see why Tenneseal will give you a good, tight, weather-sealed roof.

Investigate these dollar-saving advantages of U·S·S Tenneseal Roofing.

U·S·S TENNESEAL *5-V Crimped Galvanized* **STEEL ROOFING**

TENNESSEE COAL, IRON & RAILROAD COMPANY

Birmingham

United States Steel Export Company, New York, *Export Distributors*

UNITED STATES STEEL

METALS

. . . for the Forge of Industry

● Extensive deposits of iron ore in the Gulf South await the blast furnace and steel plant, while demand for iron and steel products increases with the growing industrialization of this region.

In the Gulf South are abundant, dependable Natural Gas -temperate climate—intelligent, reliable, white labor—low taxes (ten years' remission in some states)—varied transport—readily available land—big markets!

Industry is decentralizing southward to a friendlier atmosphere. Move to the Gulf South, where you are wanted and appreciated by your neighbors! Without obligation, let us make a confidential survey for you to meet the requirements of your industry.

★ The Gulf South ★

Invites Industry

★

For information on GULF SOUTH opportunities write to
SUPERVISOR OF INDUSTRIAL DEVELOPMENT

UNITED GAS
PIPE LINE COMPANY

FOR TEXAS, *Mail received at:* Beaumont, Beeville, Dallas, Fort Worth, Houston, Longview, San Antonio and Wichita Falls. **FOR LOUISIANA,** *Mail received at:* Baton Rouge, Lake Charles, Monroe and Shreveport. **FOR MISSISSIPPI, FLORIDA and ALABAMA,** *Mail received at:* Jackson, Mississippi.

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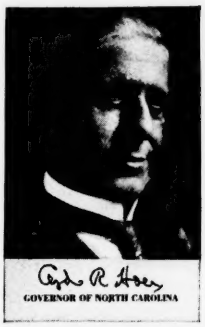
SELL SOUTH AMERICA FROM THE SOUTH

...YOU CAN'T BEAT GEOGRAPHY

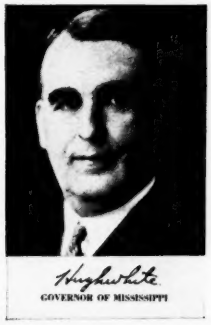
Tremendous expansion of trade with South America is freely predicted. Plant locations in the Southern States with all the advantages of lower production costs, together with splendid port facilities on the Atlantic and the Gulf offer unequalled opportunities to manufacturers interested in selling South America. Sell South America from the South.


GOVERNOR OF NORTH CAROLINA

GOVERNOR OF LOUISIANA

GOVERNOR OF OKLAHOMA

GOVERNOR OF FLORIDA


GOVERNOR OF MISSISSIPPI

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GOVERNOR OF TENNESSEE

GOVERNOR OF TEXAS

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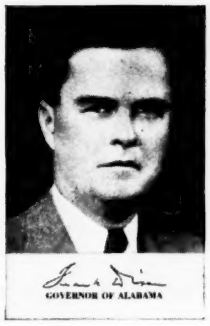

GOVERNOR OF ALABAMA

WE, THE GOVERNORS

... renew our pledge to aid and protect industrial development in the South. Here you will find a friendly attitude toward industry, business-minded legislation, unlimited supplies of raw materials and a mild year 'round climate which serves to cut production costs all along the line. Investigate the many industrial advantages the South offers for production and distribution to domestic and export markets.

GOVERNOR OF GEORGIA
Chairman

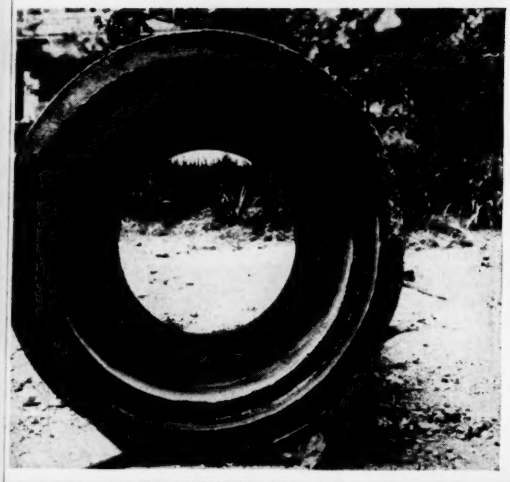
Southern Governors' Conference

Bona Allen Building, Atlanta, Georgia

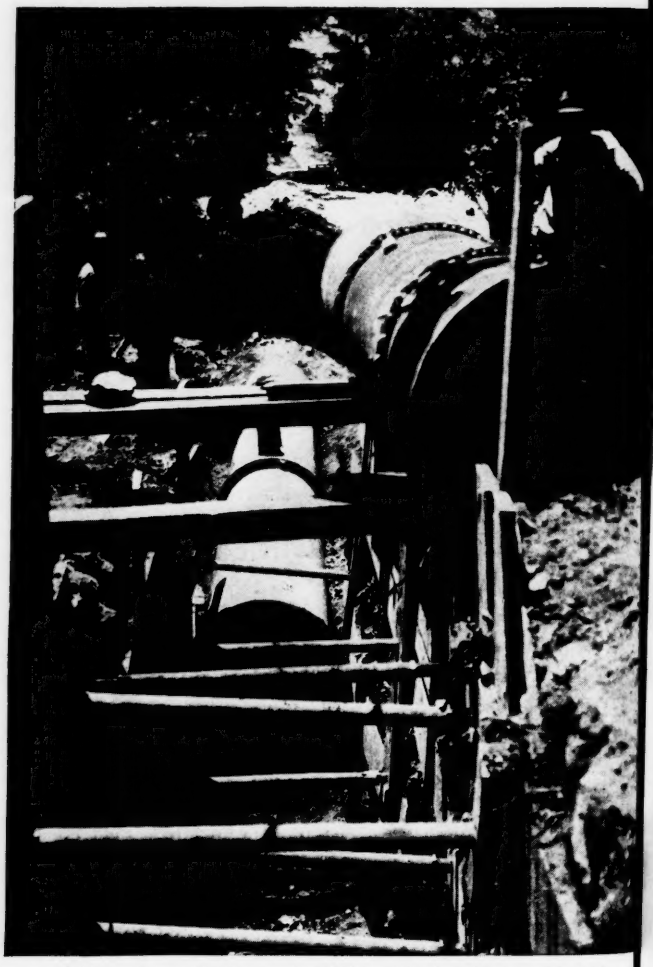
LAWRENCE WOOD ROBERT, JR., Executive Director — **CARROLL DOWNES**, Industrial Consultant

THEY RELAID IT–WOULDN'T YOU?

Highway improvements necessitated relocating a 36-inch, 46-year-old cast iron water main at Fort Worth, Texas. This pipe is shown above after being removed from the old trench.



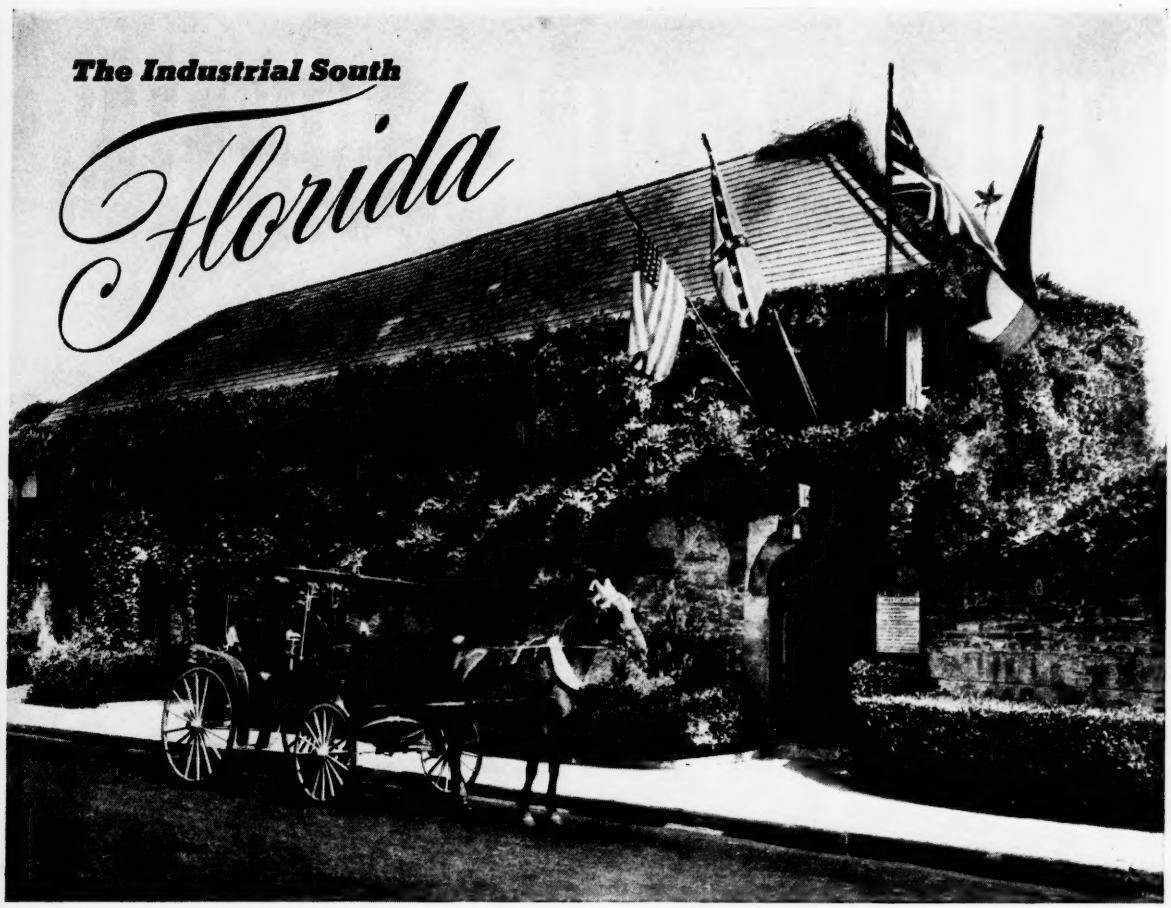
At left is a close-up, unretouched photograph of a section of the relocated main shown here. Note fine condition of pipe interior.



Above is a photograph of the old pipe being relaid in a new location after 46 years of continuous service.

The Industrial South

Florida



14 Saint Francis Street, Saint Augustine, Florida. The oldest house in the oldest city in the United States—built in the late 1500's.

Just as the fountain of youth attracted Ponce de Leon, Florida's sunny-skied playgrounds and resorts draw thousands of health and pleasure seekers every year. Palm trees, tropical flowers and glistening white beaches are common to the beautiful towns and cities lining Florida's 1197-mile coast. This southern-most point of the United States aside from being a Mecca for travellers and tourists is of great agricultural and industrial importance.

Her citrous fruits, bananas, pineapples, corn, celery and tomatoes reach the dining tables of the entire nation. Among Florida's industries are lumber production, cigar, turpentine and fertilizer manufacturing and deep sea fishing.

The rate at which Florida industries are growing is unparalleled. Bethlehem Steel Company is in a strategic position to supply the steel materials and products called for by this steady industrial growth. The Maryland Plant at Sparrows Point, near Baltimore, is the country's only major steel plant on tidewater. As a result shipments to Florida and other southern states can be made promptly by either water or rail.

Did you know?

That—St. Augustine has floated 5 different flags and has changed hands 13 times since 1565.

That—Cape Sable, Florida is 350 miles further south than Cairo, Egypt.

That—Florida has more than 30,000 lakes.

That—in the decade from 1920 to 1930 Florida's population increased 51.4 per cent.

That—Florida has recently become one of the country's leading cattle-producing states.

BETHLEHEM STEEL

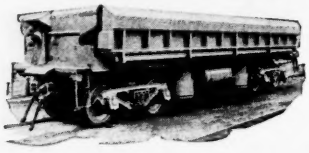
BETHLEHEM STEEL COMPANY

THESE MODERN METALS

will help you-

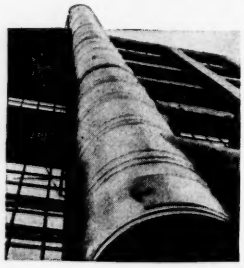
TO SAVE WEIGHT— By using Republic Double Strength Steel, the maker of this dump car cut dead-weight 12,000 pounds, reduced motive power required and, because of the higher resistance of this metal to corrosion and abrasion, lengthened the life of the car.

We recommend this low-cost, low-alloy, high tensile steel for mobile units in your plant or in your distribution system, because every pound of dead-weight eliminated means an extra pound of pay load free.



TO INCREASE STRENGTH — Somewhere in your plant or in your product there is a place where one of the many Republic Alloy Steels will justify its use on the basis of economics—will strengthen a point of weakness—will lengthen the life of your product—will lower processing costs. Our metallurgical service will help you work out the economics of alloy steel for any application.

TO FIGHT CORROSION — For use in your own plant — and in equipment you make for sale — where longer life of the sheet metal or pipe used would be advantageous from the viewpoint of longer life, lower maintenance or greater sales appeal, don't over-look Toncan* Iron—the alloy of refinedopen-hearth iron, copper and molybdenum with the highest rust-resistance of all ferrous metals in its price class.



TO IMPROVE YOUR PRODUCT — Many an old product has been given a new lease on life with a new dress of Republic Enduro* Stainless Steel. Many a new product has been given immediate buyer appeal by this beautiful metal that looks like silver and lasts so long that none will prophesy its life. Let us tell you where it will help improve the utility and appearance of the products you want to sell more of.

Literature on these products sent on request.
Our Gadsden, Ala. plant is for your convenience.

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TRUSCON STEEL COMPANY • UNION DRAWN STEEL DIVISION

PREPAREDNESS ESSENTIAL

The time has come for the United States to be fully prepared with defensive arms and men and ships of both sea and air.

The time has come to show by unmistakable evidence that this is one country that intends to keep inviolate its freedom. Events that are bringing with increasing intensity repercussions to every living individual here and elsewhere in the civilized world are too shocking to be mistaken.

Wild men are loose in the world. Nations are being enslaved in the greed for power. Ruthlessness is rampant. Families are split apart and sent away while private property is seized. Chaos has spread over Europe and Asia. Unnumbered dead is the toll being paid.

There are those who think first of the cost of an adequate defense program, but preparedness may save a far greater cost. Others think of the temptation of the United States to become an aggressor, but they don't know the spirit of America. Our purpose is for peace, and not alone our declarations but our history prove it.

It may not be possible for a foreign foe to successfully invade America, but havoc could be worked upon our coast cities in these days of long over-ocean flights by fast flying airships with bases nearby. Even though exterminated later as they undoubtedly would be, it is conceivable that great damage would have been done. In any event we would be drawn into war while alien propaganda worked overtime in our midst to divide the nation, so that time proven principles of government and democracy should be thrust aside.

The attempt is widespread in the United States today to mislead our people and capture the adherence of the unthinking by subversive alien doctrine. We have been too patient with influences that are working harm in the ranks of labor and among our school children. The slimy trail of Communism with its branches under various names extends through the United States and our people going about their daily occupations and busy with their own affairs either have failed to see it, or if they have without comprehending fully where it leads, have the delusion "it can't happen here."

Patriotism and love of country, it is not too much to say, have too frequently been put into the discard. Question your children and learn what is being taught them. It won't do to decry the Dies Committee and want its work stopped, for whatever the criticism of the spectacular methods that may or may not have been employed, startling evidence has been heard which makes decent citizens shudder about the possibilities of the poison that would bring the same chaos here it has brought elsewhere.

There is much that is obscure and incomprehensible in what is going on abroad. A seething unrest has spread among the populations of the earth, and that is all the more reason, while the doctrine of force and brutality is being practiced among so-called civilized nations, America should be fully prepared for eventualities. We cannot afford to run risks that may threaten destruction of the ideals of free speech and a free press which typify our liberty.

Until war is banished from the world, the best prepared nation is the safest, and for this purpose there may be added a new debt to the large one that already exists, but it will be for the benefit of not only ourselves but generations yet to come.

This publication has argued against the profligate course of government because what we have been doing has not accomplished a purpose that justified it. However, President Roosevelt's request for adequate defense has our whole-hearted approval, and part of it well may be spent to hunt out the foes that spread abroad among us their subversive theories.

It is time to revive love of the flag which symbolizes so much to every true American.

Industrial Mobilization

Though the reasons for it are varied, there is virtual unanimity of opinion in this country that we should keep out of war. Temporarily laying aside other considerations, the possibility of our own country embarking upon totalitarianism if war should appear imminent, ought to be sufficient warning for us to leave hostilities to others.

Those who scoff at the suggestion of totalitarianism in this country would do well to look at the record and peruse the Industrial Mobilization Plan scheduled for use in time of war and whose nom de guerre will probably resolve, as may have been intended, into I M P. The word imp is derived from the Greek word εμφιτωσ (emphytos) which means "to ingraft." In turn, "to ingraft" is to insert something in such a way as to make it a part of the original and if I M P becomes a part of our economic and industrial life there is precious little likelihood of us ever getting rid of it, for it spells dictatorship in full size capitals.

The Industrial Mobilization Plan is a public document bearing on its cover the legend "Printed by the United States Government. For sale by the Superintendent of Documents." It exists although it is so scarce that virtually no one has seen a copy of it.

However, I M P would be merely the culmination of what has been becoming more and more apparent for the past half decade, i.e., the regimentation of industry, prostitution of politics, abolition of the capitalistic system of economics, denial of individual liberty, and attempts—though not always successful, to coerce and stultify our governmental modus operandi.

It is true, as someone has said, that democracy is not a form of government but rather an attitude toward life, in which the value of the individual is acknowledged in denial of the doctrine that the individual exists for the state. Nevertheless, it is equally true that a certain form of government is necessary to preserve and perpetuate that attitude toward life just as surely as another form of government is capable of destroying it.

That the theorists in and back of the new deal will change our form of government and life—economic and social, appears to be almost inescapable. Evidence to that effect is abundant everywhere.

When President Roosevelt first took office, economy ruled the day and staffs of the departments of the federal government, which had been functioning effectively for years, were subjected to the proverbial economy axe. Then, as "emergency" after "emergency" arose it became "necessary" to establish a mass of bureaus whose fantastic cognomens have developed into an alphabetical welter. Judging from appearances and results, eligibility to join the staff of these bureaus consisted of championing the "undertrodden third," disbelieving and discrediting business men, and generally pursuing the theory that the working man is always right and the business man always wrong—if not worse.

Were it not for the lack of space and possibility of becoming tongue tied over jumbled alphabets, we might cite many examples of these bureaus' autarchical deeds. As it is, the record of N E C's outburst against the South, the TNEC's ill-concealed suspicion while investigating so-called monopolistic practices, and the NLRB's apparent ignorance of the fact that employers even exist, are but a few of the results. And the people who staff these bureaus are of the same ilk as those who have drawn up this new specimen of their ingenuity—I M P. Knowingly or in ignorance, these theorists unless curtailed will eventually bring us to the brink of what we cry loudest against—dictatorship.

Some New Unions

There appears on another page an article by the President of the Aircraft Worker's Union directing attention to the important place shop foremen occupy in employer-employe relations.

The author's view is that foremen have to be placed in two categories—good and bad. He states that from the workers' standpoint "there are more foremen in the bad classification than in the good." They are essentially "yes" men to their superiors. "They snipe from ambush any deserving worker who is a threat to their jobs."

A situation arose recently in the Chrysler strike which is now over. It presented a new angle in union labor demands. After more than seven weeks negotiations between Chrysler management and the CIO, foremen in the employ of the Chrysler Co. decided to organize a union of their own for collective bargaining, and asked their employer to hear their grievances. According to the terms of the strike settlement afterwards reached, the foremen are understood to have abandoned for the time being their intention to organize, but as a question perhaps for the future which may present itself to management, it appears to have only one side.

Foremen occupy an executive position in large plants, and through them complaints of workers are brought to the attention of the employers, or are satisfied without going that far. This besides seeing that the men under them perform their duties properly.

They might steal the show for a time with both employers and employees catering to them, but as a permanent institution it doesn't appear to make sense. The unions, however, are extending their efforts for membership. Ship owners discovered it when their officers joined a union. Newspaper writers formed a union as well as actors, office workers and others. Maybe capital will have to do it, too, and start a strike of its own.

Steel Progress

At the close of November the steel industry was operating at a rate of 94.4 per cent of capacity, or 50 per cent above the rate of operations for the same time a year ago.

Prices in certain lines for future delivery have been uncertain in recent weeks, but now it is expected, based on announcements by large steel manufacturers, that steel prices for the first quarter of 1940 will remain unchanged. Prolonged uncertainty undoubtedly would have led to increasing confusion in all branches of industry and the word that has now gone forth should have a definitely steady effect in purchasing departments which have found it difficult to know how to proceed. Some confusion has been evident among contractors and others because of the uncertainty of deliveries, which is due to the rush of orders received at steel centers.

It is now apparent that leaders in the steel industry do not favor an inflationary price movement. An announcement to this effect has come from Carnegie-Illinois which means in its essence that this producer is willing to take care of the present higher cost of production without raising the rates to their customers. The effect will be seen in other lines of manufacturing, of which steel forms an important part. It would also seem to relieve uncertainty in going forward with expansion plans that have been waiting on definite word of how prices would go.

The month recorded other activities of an encouraging type. Among them was the large transaction completed by Great Britain for the purchase of over 750,000 tons of scrap for shipment in the next three months at a price several dollars above the last sale. The amount of the tonnage is nearly 25 per cent of the total United States exports of scrap iron and steel during the entire year of 1938.

Italy is said to have contracted for 150,000 tons under similar terms and conditions. The report i; this is in accord with purchases by that country for several years past and is for Italy's own consumption.

Business generally takes encouragement from the activity in iron and steel districts where the night skies again are bright with the glow from furnaces and mills. The impact upon other lines will have a stimulating effect. Unless the picture as it now appears is changed materially, it is likely capacity operations will continue for sometime. Railroads are again buying in quantities. The defense program as outlined will be a material contributing factor to steel and iron activity, and to the demand from these quarters may be added shipbuilding requirements, the needs of automobile manufacturers and orders from foreign lands.

A Rate Decision Favorable to the South

As this issue goes to press, encouraging news comes from Washington to the effect that the Interstate Commerce Commission has ruled that rates on certain manufactured and processed goods from the South will be hereafter on practically the same freight rate level as within the North. The decision covered only a partial list of manufactured and processed articles, but doubtless the reasons for applying the same rule of equality between Southern and Northern freight charges to other other commodities will be presented in due time.

The South's advantages for manufacturing are manifold and apparent. As a factor in increasing the wealth of America this territory is truly the nation's greatest asset. Nature has blessed it with resources unequalled elsewhere, and it is clear that an unfair embargo rested upon Southern shippers in keeping closed to them, in many instances, other markets which they are entitled to reach. The decision will be received with satisfaction by large numbers of Southern business concerns.

Alabama Power Company Improvement Program

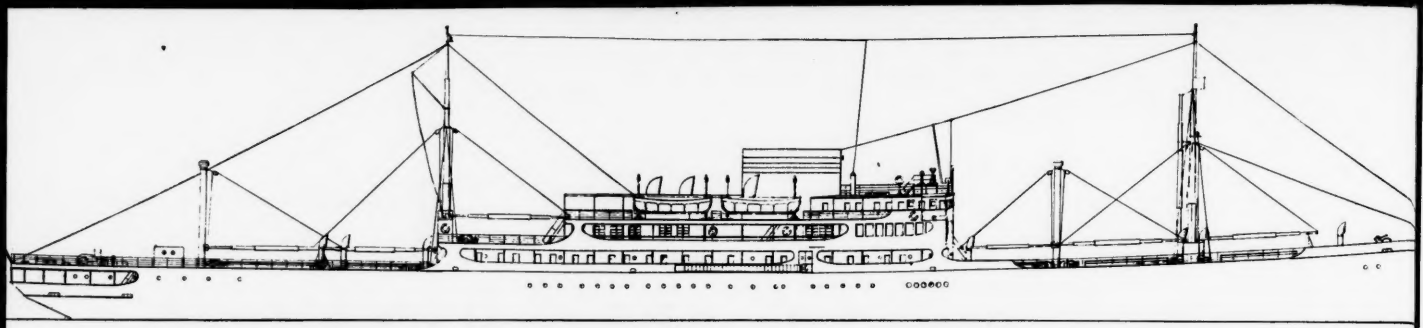
President Thomas W. Martin of the Alabama Power Co. announces that the 1940 construction program of his Company will call for an expenditure of $6,165,000. More than $1,000,000 of this is to extend additional service into rural areas of Alabama. Counting the service already established, there will be a total of 43,000 customers served in rural areas of the state, and line mileage, when the proposed new lines are built, will be more than 7,900 miles.

Included in the construction program is a new steam power plant at Mobile, and the other major item is for additional lines, equipment and improvements to be added to the transmission system in all parts of the state.

Arrangements have been made to finance the work outlined. Mr. Martin does not hesitate to say that "continued attacks on utilities by public officials may seriously interfere with our program for further development of Alabama."

It was stated by leaders in the utility industry months ago that if they were allowed to proceed unhampered in the development of their territories they were prepared to spend almost immediately as much as a billion dollars for additional facilities.

Plainly the result to be attained of increased employment, lowered electric rates and better living conditions make it a worthy program—one to be encouraged and not discouraged by government competition.



Southern Ships for Southern Trade

One of the prime difficulties of the shipping industry in the past has been a disinclination by persons, both in and out of it, to treat it as an ordinary American business. There have been ship operations maintained because of tradition, pride, or even bull-headedness. There have been exporters who have felt that their goods should be carried at a loss to keep ships operating; importers who have felt that ship lines should store goods indefinitely and absorb heavy storage fees. The government has been an offender, at times, in attempting to keep alive some uneconomic ship operations merely for the patriotic pleasure of seeing a few more American flags on the ocean.

None of these things lead to economical, efficient operation of an indispensable type of transportation. Shipping, to be successful, must be governed by the same rules that govern any successful business venture. Probably the most vital single point to be remembered in the transportation industry is that the buyer of transportation shall be furnished the best possible product.

Ship lines cannot secure profitable trade with old, ugly, rusty, slow, poorly designed, and poorly equipped ships. Such vessels are rightly called BOTTOMS as all they provide is a bottom to keep the cargo from going right through to the ocean. They do not offer what transportation should offer—clean receptacles equipped for storing and preserving goods in transport, fast carriage, and efficient loading and discharging.

The Mississippi Shipping Company, in building its three new passenger cargo ships, is demonstrating that the shipping industry can be operated as a sound business venture. It is recognizing that shippers and travelers want the best when they buy transportation just as they do when they buy clothes or food.

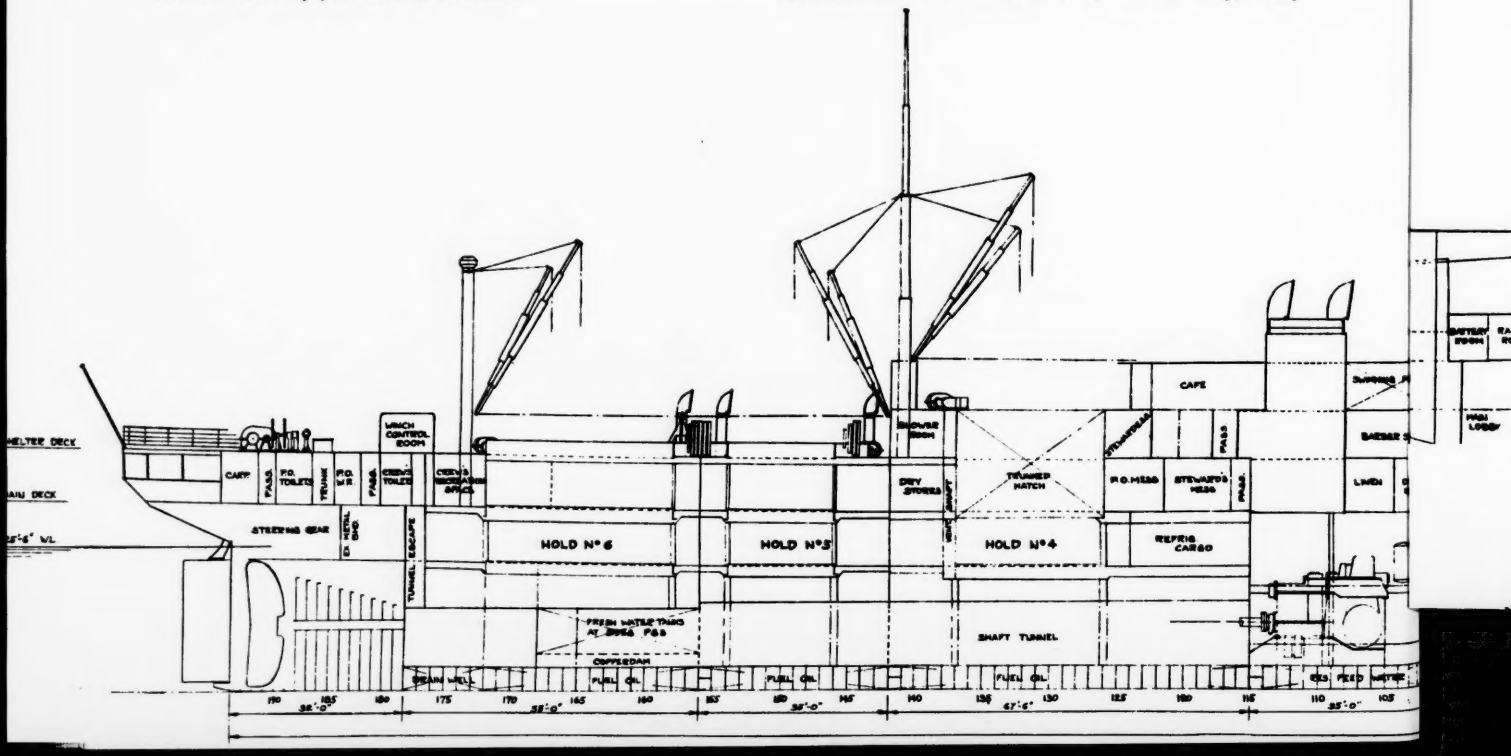
The new Delta Line ships are among the best in the Maritime Commission's program. They have all the elements of good design, speed, pleasant passenger quarters, and efficient cargo facilities necessary to make them a good business investment. Their acquisition is indicative of the development of a true commercial attitude in the shipping industry.

My hearty congratulations to the Mississippi Shipping Company and all of its personnel.

E. S. LAND,
Chairman United States Maritime Commission.

ON December 16th there will slide down the ways of the Bethlehem Steel Company at Sparrows Point, Maryland, the first of the Delta Line's new fleet and first of a series of new vessels designed and built specifically for the trade between New Orleans and the East Coast of South America. The launching of this vessel, the DELBRASIL, which will be sponsored by Mrs. Maria Martins, wife of the Ambassador from Brazil, represents the culmination of 20 years' intensive development work which has been carried on by the Mississippi Shipping Company working hand in hand with the United States Shipping Board and its successor, the present U. S. Maritime Commission.

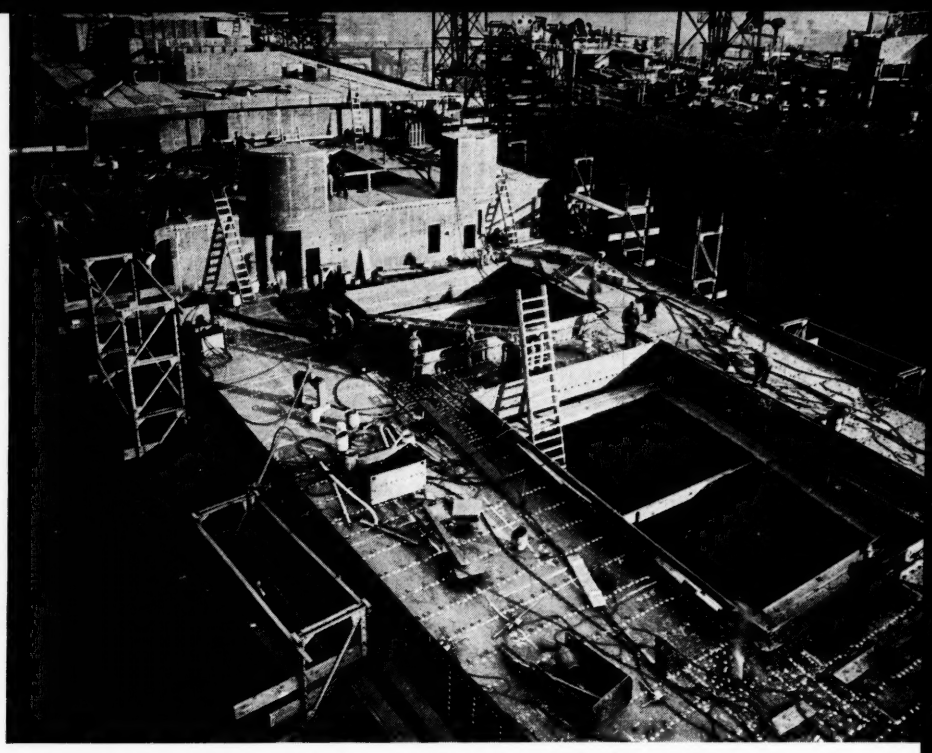
This launching is noteworthy as it marks several "firsts." It will be the first vessel designed and built exclusively for the trade route which it will serve, i. e. between Gulf ports and the South American Republics. It will be the first combination passenger-cargo vessel built for private owners with the assistance of the Maritime Commission. It will be the first vessel to be built by and for a steamship company domiciled and largely owned in the Port of New Orleans, and as already stated, it will be the first of a fleet of at least six vessels building and to be built by the Mississippi Ship-



ping Co., Inc. Finally, it will be the first ship built in the South with Southern materials and labor for a Southern shipping company to be operated from a Southern port.

The Company was organized early in 1919 for the purpose of providing regular two way, dependable steamship service between New Orleans and other Gulf Ports and Brazil. Its founders and organizers were principally New Orleans business men, bankers, importers, and exporters. Its primary purpose was to assure frequent and dependable service to importers of green coffee from Brazil. The extent to which it has accomplished its purpose is evidenced by its continuous, consistent growth and the fact that it is now financially able to replace its fleet with new high class vessels.

Not long after the establishment of the service with vessels of the United States Shipping Board, operations were extended to include the ports of the River Plate. In 1922 the Mississippi Shipping Company acquired a majority ownership in the American Steamship Agencies Company of Santos and Rio de Janeiro, Brazil, in order to render better service to its vessels and its customers at the most important coffee ports of Brazil. In 1926 the American Dispatch Line, formerly operated for the United States Shipping Board from East Gulf Ports to the River Plate, by Munson Steamship Company, was consolidated with the services maintained by the Mississippi Shipping Company under the trade name, Gulf Brazil River Plate Line. In 1929 the Company acquired ownership of the vessels which it was then operating and paid the highest price ever received by the U. S. Shipping Board for vessels of similar type. Following the purchase of the vessels, the trade name, Delta Line, which was the name under which the service was started, was substituted for Gulf Brazil River Plate Line. In 1930,



The after deck of the Delbrasil looking towards 'midships

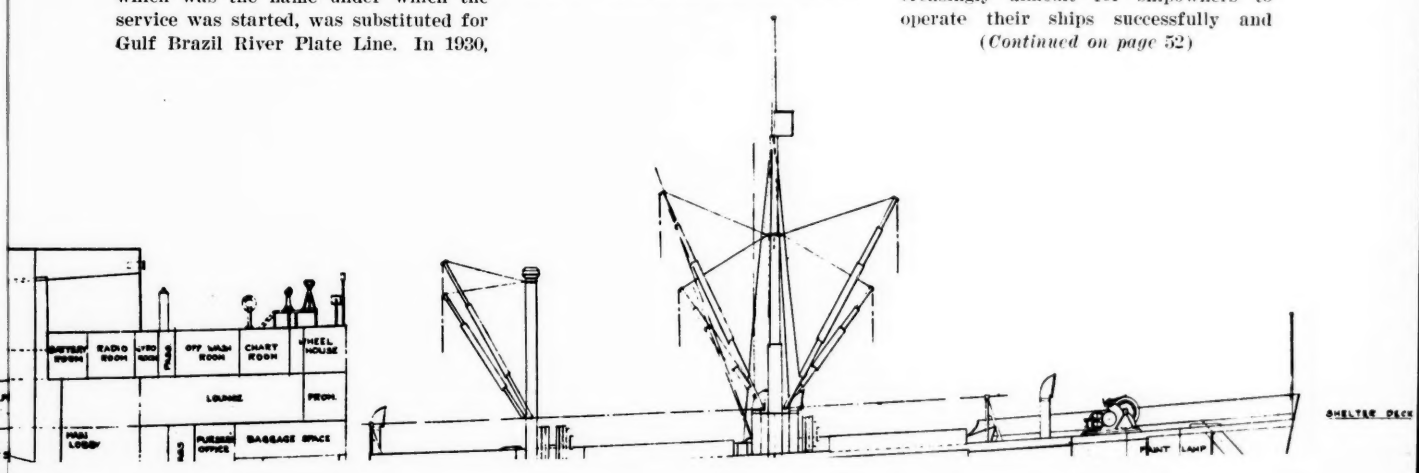
after protracted negotiations and difficulties, the Company was awarded a mail contract by virtue of a special joint resolution adopted by the Congress of the United States. On the passage of the Merchant Marine Act in 1936, the Company entered into negotiations with the Maritime Commission for an operating differential subsidy agreement which was consummated in 1937. This first subsidy agreement was for a period of six months, and during its life there was negotiated with the Commission a long range agreement which became effective January 1, 1938, and which, among other things, provided for the construction of six new vessels, the first of which, the DELBRASIL, will be launched on December 16, 1939.

The general characteristics of the DELBRASIL and her sister ships, the DELTARGENTINO, and DELORLEANS, which will be launched respectively in March and September, 1940, are as follows:

Length over all .....492 feet
Beam .....65 feet, 6 in.
Load Draft .....25 feet, 6 in.
Load Displacement .....14,200 tons
Speed (Service) at loaded draft .....16.5 knots
Passenger capacity 63
Cargo capacity (Bale cubic) .....443,000 cu. ft.
Cargo capacity (approximately) .....6,100 tons

For several years it has been increasingly difficult for shipowners to operate their ships successfully and

(*Continued on page 52*)



Foremen And Strikes

BY

Adam H. Unsworth,

President Aircraft Worker's Union

THE number of foremen in this country has been estimated at 3,000,000. The word foreman is used here as a general term, applying to all those holding executive positions in the factory. They are the backbone of industry, and as such are the link between the brain and the muscles of any industrial set-up.

But although an uncommon amount of attention has been focused on Labor during the past three years, little consideration has been given to foremen as one of the contributing factors in establishing good feelings or breeding dissatisfaction in Labor's ranks.

During the year 1937, according to a report of the National Labor Relations Board, there were 4,740 strikes involving 2,000,000 workers who lost 28,000,000 days of work. It is appalling to note the amount of money that could have been kept circulating during this one year but was lost forever due to these strikes. Perhaps the stupendousness and stupidity of the whole thing makes one ask, "Why do these things happen?" And when it is realized that two thirds of these strikes were for union recognition, one well may wonder why such an exorbitant price is paid for unionization and why men join unions.

Underlying all other reasons is the fundamental law of self preservation. The aims and purposes of Capital and Labor are diametrically opposed at the present time, thus making it necessary for the groups to present an united front to each other. Labor therefore organizes.

Any Labor leader knows all too well that it is almost impossible to organize a group of contented workers. Without organization there is no medium by which strife can be brought about. It is axiomatical that in order to avert Labor trouble, a business should be manned by satisfied employees.

Much credit should be given to manufacturers who have spent much time and money in trying to improve the working conditions of their employees, and in keeping them healthfully happy. Despite these efforts the mysterious fact remains that even the most philanthropic businesses have their labor troubles. It is evident that something is lacking, some intangible abstract catalysis in the Labor-Capital reaction.

Many Labor unions are to be commended for their cooperation with their respective managements by suggesting better ways of producing articles or voluntarily taking "cuts" in hard times or raising capital that has been denied by a bank—and so it goes, cooperation on one hand; tumult on the other.

Invariably there is to be encountered a fine spirit of loyalty and a sullen resentment in different sections of the same plant. One reason for this wide difference in attitude lies in the foremen's interpretation of company policies and his conception of his position.

The good foreman gets the job done, retains his men and wins their respect and admiration. He helps them with their personal problems, his judgment is highly regarded and his fairness is unquestioned. He quickly notes and praises a good job well done. His men get credit when it is due and are not exploited for their foreman's aggrandizement. He is the captain of an undefeatable team that scoffs at the Labor organizer when he comes around with his loud speaker and leaflets. His men are content.

It is too bad that foremen have to be placed in two categories—good and bad. Unfortunately, from the workers' viewpoint, there are more foremen in the bad classification than in the good. Their sins are legion. They are whipcrackers who regard their men as nothing more than expendable material. Their petty tyranny is revolting. Far too many of them hold their positions solely because of their ability to "yes" their superiors; others because of family relationships to higher-ups. They snipe from ambush, any deserving worker who is a threat to their jobs. A happy face is anathema to them and it is far beneath their puffed-up dignity to be pleasant to their men. Some peculiar defense mechanism prohibits them from having a "man to man attitude." They have built up in their minds such a false sense of importance that it becomes psychosis. The unjustice they dispense, the pilfering of ideas, and lack of common decency is analogous to a screwed down safety valve.

The canny Labor organizer, seeing this weakness, hits the over-stressed spot. The results, one more violent strike is spread across the front page.

This strike is against the foremen rather than the company. The workers, because of pent-up feelings, in sheer desperation eagerly welcome the chance to organize and be in a position to strike back.

The directors of any business would be surprised, if the question, "What do you think of your foreman?" were frankly answered by the workers.

The hectic days of mass unionization are probably over. No one can deny that Labor has taken tremendous strides on the road to more consideration. It is inevitable that there will still be strikes and disputes about conditions over which foremen have no control. Their decent conduct, however, can do much to minimize the number of disturbances.

Fifty Years In Business Magazine

A new publication comes from Nashville under the title "The Fifty Years in Business Magazine." The first number has Mr. James G. Stahlman, publisher of the Nashville *Banner*, as guest editor.

Attractive in form and containing pictures of early business founders, the magazine pays tribute to firms, educational institutions and other agencies which have been contributors to progress. Published in Nashville, Tennessee, by the National Fifty Years in Business Club, under the supervision of Charles C. Gilbert, executive director, the quarterly appears destined to open a new field in publications.

That it can do a good work is ably expressed by Mr. Gilbert in the following declaration of purpose—"to call attention to the successful application of sound business methods as were established by the founders of many of the nation's present day concerns. * * * We expect to hold aloft the fundamentals responsible for the success of the concerns which have passed so many troublesome mileposts."

Mississippi Tire Plant Plans Expansion

The Adams Tire plant which was brought to Natchez, Mississippi, through the Balance Agriculture with Industry act is at present employing 350 persons all of whom are natives of Mississippi with the exception of 18 executives. A recommendation for additional machinery which will provide employment for 150 more persons has recently been made and will then increase the total annual payroll to approximately $600,000. The average pay for the entire plant is 55c per hour, less than 20 persons earning only 30c per hour. The others range from 40c upward while those on a piece-work basis are earning as much as 72c an hour.

Census of Manufactures

Starting January 2, 1940, manufacturing establishments in the United States will be visited by United States Bureau of Census enumerators to obtain the necessary details for the biennial census of manufactures as a part of the 1940 decennial census. This important enterprise of obtaining a complete statistical picture of manufacturing in the United States requires the whole-hearted support and cooperation of all concerned. The MANUFACTURERS RECORD urges its readers to make their reports promptly and as completely as possible so that the census may be complete and accurate thus helping to give additional value of timeliness to the statistics compiled.

Cotton's Uses In Relation To Housing And Construction

Courtesy Agricultural Adjustment Admin.

A small house with cotton roofing used by the Forest Service of the U. S. Department of Agriculture at Ames, Iowa

BY

Charles K. Everett,

The Cotton-Textile Institute

THE utilization of cotton fabric for interior and exterior coverings as well as in the actual construction of low cost homes, has now progressed to the point where specially prepared products are scheduled for commercial production early in 1940.

These are only some of the many new opportunities for the use of cotton at present being revealed. A good number of these can and will be exploited immediately, especially those already mentioned and others having to do with the substitution of cotton for burlap in the bag and other trades. Without question in numerous instances—once the use of cotton becomes established by custom—its tried or proven advantages in actual service in point of better tensile strength or longer life, or otherwise, will firmly take root in the minds and judgment of the users. In other cases, of course, how long some of these uses can be sustained will depend upon a number of variables and, indeed, in large measure, on the future course of international trade now badly dislocated by the war in Europe.

In quite another field, there are now in course of attainment other new uses for cotton which, significantly enough, do not represent the substitution of one textile for another. On the contrary, these opportunities which are presented by outstanding developments in housing and construction offer wholly new—in the sense of additional—uses for cotton which give evidence of permanence and, moreover, indication of being capable of future expansion irrespective of a continuing war or an early cessation of current hostilities abroad. In the eyes of Government officials searching for the most practical means and methods for the removal of the present cotton surplus, and according to cotton manufacturers who have interested themselves in these potential new uses, there seems to be gratifying unanimity of opinion that the housing and construction industry holds, perhaps, the greatest promise for effecting an increased consumption of cotton here in the United States.

Throughout the country today housing activities center around low-cost structures. Various Federal agencies in encouraging the erection of new homes in urban, suburban and rural developments are giving unprecedented impetus to the introduction of new economies in construction that constantly attracts to the potentialities of cotton more serious attention and interest on the part of architects and builders alike. In response to that encouragement for the employment of new methods and materials, it is noteworthy that the cotton industry has already to its credit certain achievements whose merits are now coming in for due recognition.

Courtesy Federal Security Admin.

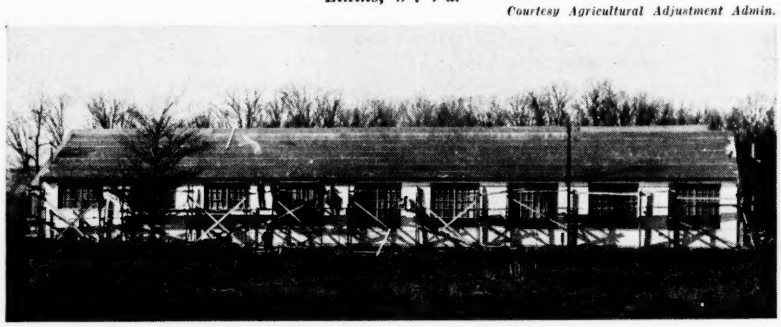
A cotton-sheathed house near Elba, Coffee County, Ala.

It is now several years since the Cotton-Textile Institute first came forward with the idea that cotton fabric could be utilized in a perfectly practical and satisfactory manner for facing the outside wall surfaces as well as roofs of low-cost homes, and to support its claims displayed miniature models embodying that idea as developed by eminent architectural authority. The fact that since then literally hundreds of inquiries have been received from architects, builders, and prospective home owners, plus the actual existence in service today of several demonstration houses readily at-

(*Continued on page 46*)

Cotton fabric being applied to the roof and walls of the Central Repair Shop. Elkins, W. Va.

Courtesy Agricultural Adjustment Admin.



South America's Exports to Germany and the United States

IN the last two issues of the MANUFACTURERS RECORD have appeared articles of a current series devoted to foreign trade, with particular emphasis on the opportunities for its further development, especially between the United States and South America. The subject is timely because of hostilities in Europe and the inability of belligerent nations to fill the needs of an expanding South American market as adequately as in times of peace.

In the October issue of the MANUFACTURERS RECORD, space permitted only an abridged list of the principal commodities which Germany had been supplying Central and South American nations before the outbreak of war. While it is still far too early to accurately gauge the effect of the European situation on South American trade, the assumption is that European nations, and particularly Germany, because of war, internal conditions, and naval blockade would be unable to continue sending exports to South America. Naturally, the whole subject is complicated by many different factors, wheels within wheels that defy early, clear-cut analysis. It is the purpose of this series of articles to throw light on the fundamentals involved, with the special thought of pointing out new opportunities to American industry.

The position of the South in all this because of its location geographically, its long coastline with more than adequate port facilities, and its rapidly-developing diversified industries is peculiarly advantageous for the development of trade between the South and South American countries. Merchandise handled in imports and exports between the Southern ports and South America now exceeds 10,000,000 tons annually.

The question has been recently raised in the press and elsewhere that the United States cannot hope to materially increase the sales of its manufactures to South and Central American countries unless we, in turn, buy more of their output. As a matter of fact, the balance of trade is distinctly in South America's favor, for in 1937, the last year for which figures are available, South American imports from the United States totalled $550,000,000, while South American exports to the United States amounted to $745,000,000, leaving a favorable balance of nearly $200,000,000.

This article attempts to throw additional light on this particular phase of the question. It is desirable, therefore, to give careful consideration to the exports South American countries have been sending to Germany in relation to the exports, particularly of the same commodities already being sent to this country.

Imports of 20 South American countries' goods into Germany amounted to $207,266,000 in 1937 compared with $359,838,000 for 22 countries in 1938. During the first six months of 1939 the total for 22 countries was $155,562,000. On a percentage basis in 1937, Germany generally imported the second largest amount of South American goods, being exceeded only by the United States and, in the case of six separate countries, by the United Kingdom.

ARGENTINE

German imports from the Argentine in 1937 aggregated $51,540,000 and comprised the latter country's fifth largest customer. Argentine goods, imported into the United States in the same year amounted to $96,687,000. Among the principal commodities involved were the following:

Commodity	*Exported to Germany*	*Exported to U. S.*
Meats including canned meats	$3,735,112	$2,564,242
Salted cattle hides	4,036,287	5,475,212
Goat and kid skins	43,710	897,450
Casein	622,170	311,010
Grease and tallow	1,064,850	560,884
Butter	47,197	169,167
Cotton (raw)	1,000,447	.....
Quebracho extract	1,452,892	1,964,160
Fishing and hunting products	145,545	1,195,050

The above figures are for 1937 and represent principal selective commodities from the Argentinian point of view. In 1938, German imports of Argentine products rose to $86,861,000 while for the first six months of 1939 the total was $31,917,000—a proportionate decline of more than 26 percent. Since 1937 the major items obtained by Germany from the Argentine are:

Commodity	1938 *Tons*	1938 *Value*	6 *mos.* 1939 *Tons*	6 *mos.* 1939 *Value*
Meats	51,335	$ 9,621,000	33,848	$5,833,000
Wheat	154,621	7,345,000	9,179	293,000
Barley	124,208	4,891,000	25,867	910,000
Rye	993	40,000	9,735	441,000
Corn	597,171	19,243,000	48,358	1,501,000
Animal waste for human consumption	1,879	655,000	1,273	377,000
Raw cotton	16,227	4,614,000	4,224	1,205,000
Raw wool	27,863	13,560,000	15,377	6,358,000
Hides, skins, furs (undressed)	19,598	5,451,000	not-available	2,160,000
Lead ore	9,223	577,000	6,069	352,000
Casein	3,254	507,000	2,449	226,000
Quebracho (wood)	18,470	556,000	10,263	275,000

BOLIVA

Although Germany ranked sixth among Boliva's best customers in 1937, the value of goods exported to Germany only amounted to $491,000. However, in 1938 the total increased to $3,343,000, a rate of trade that appears to have been maintained at least during the first six months of 1939 when the total was $1,691,000. By far the majority of this trade consisted of minerals, as seen from the following:

Commodity	1938 *Tons*	1938 *Value*	6 *mos.* 1939 *Tons*	6 *mos.* 1939 *Value*
Lead ore	11,503	$1,005,000	5,375	$414,000
Tungsten ore	761	718,000	514	388,000
Tin ore	5,939	797,000	2,563	407,000
Cinchona bark	184	113,000	34	82,000

BRAZIL

Germany, Brazil's second largest purchaser in 1937, bought goods totaling $59,502,000 in that year, being outranked only by the United States whose pur-

chases amounted to $126,328,000. Among the most important of Brazil's exports to Germany are the following together with comparable figures for the same commodities to the United States:

Commodity	Exported to Germany	Exported to U. S.
Coffee	$10,121,705	$70,679,125
Cotton	10,723,900	.....
Rice	225,005	.....
Tobacco leaf	1,903,990	.....
Rubber	1,815,110	885,445
Hides and skins	3,630,385	4,616,810
Sheep wool	2,360,710	.....
Oil seed cake	947,210	.....

In comparison with the latter, Germany's imports of Brazilian goods in 1938 and for the first six months of 1939 aggregated $86,187,000 and $36,759,000 respectively. Outstanding commodities in these periods were:

	1938		6 *mos.* 1939	
Commodity	*Tons*	*Value*	*Tons*	*Value*
Coffee	91,790	$23,446,000	45,972	$9,293,000
Cacao	10,599	1,628,000	10,291	1,410,000
Tobacco	14,383	4,721,000	6,284	2,165,000
Southern fruit	22,595	2,029,000	8,685	784,000
Raw cotton	81,057	26,884,000	33,592	11,575,000
Raw wool	4,878	4,435,000	3,215	2,738,000
Hides, skins, furs (undressed)	18,863	6,870,000	not available	1,250,000
Uncut deciduous wood	8,654	230,000	35,860	914,000
Crude rubber	6,715	2,555,000	3,284	1,283,000
Manganese ore	47,769	626,000	31,804	299,000
Mica	48	104,000	21	43,000
Quebracho (wood)	3,978	121,000	436	14,000

CHILE

In 1937, Germany was Chile's third largest customer purchasing goods in the amount of $18,575,000 compared with United States purchases of $43,918,000. The principal items in this trade were:

Commodity	Exported to Germany	Exported to U. S.
Gold ores	$25,760	$197,540
Gold concentrates	945	51,660
Other gold and silver, ores, concentrates and precipitates with copper, lead, or zinc	98,595	482,650
Lumber	62,300	.....
Sheeps wool	879,340	.....
Sheepskins	241,080	164,065
Cattle hides	92,645	.....
Tripe	65,240	92,960
Beeswax	33,950	1,820
Honey	30,975	.....
Oats	156,450	.....
Beans, peas, lentils	548,065	198,380
Fruits and vegetables	94,675	41,965
Vegetable fibers	110,635	.....
Beans and middlings	80,885	15,470

Compared with the foregoing, Germany's purchases from Chile since 1937 have almost doubled, amounting to $36,445,000 in 1938 and $20,680,000 for the first six months of 1939. Chief among the items purchased were:

	1938		6 *mos.* 1939	
Commodity	*Tons*	*Value*	*Tons*	*Value*
Edible beans	3,535	$474,000	5,186	$490,000
Lentils	38,498	4,178,000	14,587	1,649,000
Animal waste for human consumption	591	470,000	137	144,000
Hemp	2,768	659,000	1,199	264,000
Raw wool	9,407	7,055,000	6,377	4,061,000
Sodium nitrate	147,016	4,849,000	132,025	4,211,000
Crude copper	40,007	8,373,000	18,243	4,088,000

COLOMBIA

Colombia has for several years occupied sixth place among the Latin and South American countries whose goods are imported into Germany. In 1937 this merchandise purchased by Germany in the amount of $10,703,000, comprised Colombia's second largest customer being exceeded only by the United States whose purchases totaling $66,799,000 included gold shipments valued at $18,111,000. The principal items going to Germany with the comparable figures for the United States were as follows:

(*Continued on page* 50)

Letters to the Editor

Enjoyed the Article on Sugar

New Orleans, La.

Editor,
MANUFACTURERS RECORD:

I just returned from a trip and received the October number of the MANUFACTURERS RECORD with the article on sugar. It is a fine article, and I enjoyed reading it immensely.

JUSTIN ALBERT GODCHAUX, *President,*
Godchaux Sugars, Inc.
November 24, 1939.

"Interesting and Informative"

Tallahassee, Fla.

Editor,
MANUFACTURERS RECORD:

I have read portions of Dr. Branner's excellent article on the mineral production of the South in the November MANUFACTURERS RECORD and will give it additional attention at my first opportunity. It is intensely interesting, and very informative.

HERMAN GUNTER, *State Geologist.*
November 20, 1939.

"Doing A Wonderful Job"

Richmond, Va.

Editor,
MANUFACTURERS RECORD:

I have the November MANUFACTURERS RECORD before me and the article on the South's mineral resources is certainly interesting and instructive. I congratulate you upon it. I think you are doing a wonderful job in these special articles.

I was very much interested in the advertisement of the Bethlehem Steel Company on page 31, which, in my judgment, is really outstanding and very enlightening. If the occasion should present itself, I would appreciate your expressing my gratitude to those responsible for the Bethlehem Steel Company display.

N. CLARENCE SMITH, *Chairman,*
Virginia Conservation Commission.
November 22, 1939.

"Gave Me Information I Did Not Have"

Charleston, W. Va.

Editor,
MANUFACTURERS RECORD:

You fellows did a swell job for the mineral industries of the South in your November issue. The article on West Virginia navigable water ways gave me information which I did not have in my possession.

JESSE V. SULLIVAN, *Secretary,*
West Virginia Coal Association.
November 13, 1939.

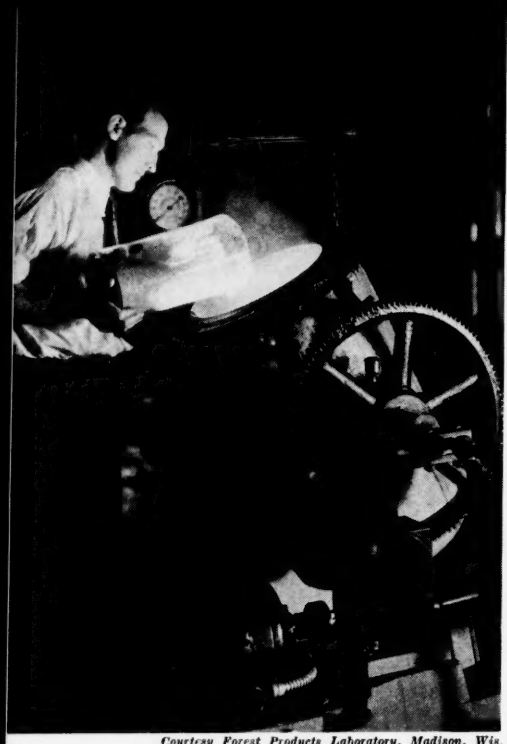
"Your Magazine Is Fine"

Baton Rouge, La.

Editor,
MANUFACTURERS RECORD:

Your magazine is fine. Anyway, I should subscribe on account of the stand you take against regimentation of everything and everybody.

R. E. SWINNEY, *Contractor.*
November 15, 1939.



Courtesy Forest Products Laboratory, Madison, Wis.

Chemurgic Plastics

BY

Robert D. McMillen,

Director of Information, National Farm Chemurgic Council

OF utmost significance to modern industry is the rapid development of plastics made from agricultural raw materials. Automobile parts, building materials, toys, jewelry, wrapping sheets, home furnishings, even textiles are now being made from materials that originate on the farms of the United States.

Among the crops rapidly being adapted to industrial uses are soybeans. Not only is soybean oil useful in paints, but the soybean protein has important plastic potentialities. The United States Regional Soybean Industrial Products Laboratory at Urbana, Illinois, has made bottle caps, automatic pencil cases and a host of other plastic objects, including ash trays that can be made either opaque or translucent. The Ford Motor Company has already displayed trunk compartment doors made of laminated board plastic. The plastic material in some instances comes from soybeans. The trunk decks, of course, are still in the experimental stage of development, yet severe weathering tests and rigid examinations of the strength of the plastic have already proved its value. Smaller soybean plastic parts have been standard equipment in Ford cars for several years. An Ohio firm, in a plastic pilot plant, is using tons of soybeans daily.

Above—Putting sawdust into the digestor for hydrolysis in the process of making the Forest Products Laboratory plastic.

Right—Various stages in the manufacture of lignin plastics from wood.

The number of cellulosic plastics is tremendous. The first thermoplastic ever known was celluloid, invented in 1868 when John W. Hyatt blended camphor and nitrated cellulose in a successful effort to make an imitation ivory billiard ball. Since Hyatt's discovery cellulose derivatives have been found as the toy animals that float in the bathtub, as photographic film, in artificial leather, airplane dopes, lacquers, as the film that accounts for the "safety" in safety glass, as pens and pencils, as hairbrushes, as—the list is virtually interminable. Our cellulose is derived from wood and cotton linters.

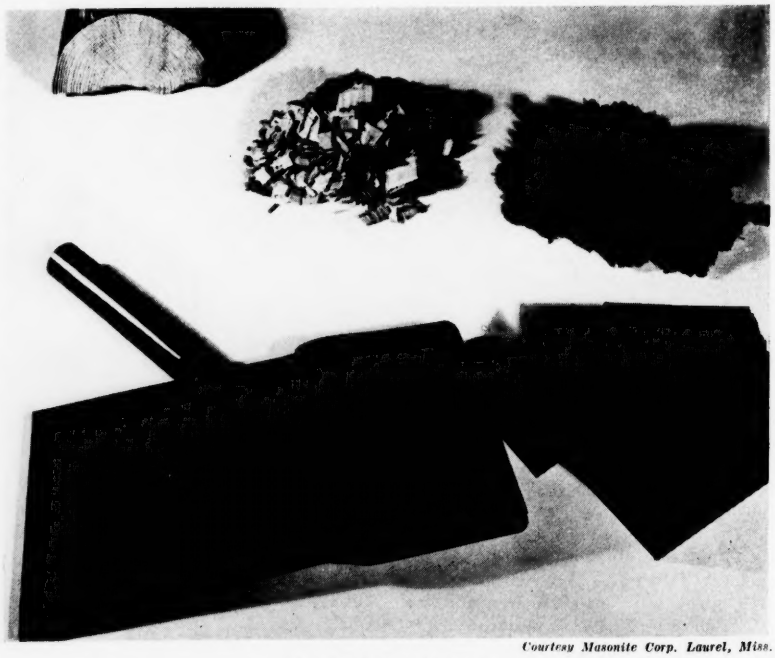
In its plant at Pekin, Illinois, the Corn Products Refining Company has begun the commercial production of zein, an aqueous alcohol soluble protein. By itself zein forms a brittle film and, like most other materials, has to be modified by the addition of placticizing agents to soften them down. Zein is used for coating paper and similar material and, with the use of aniline dyes, in printing paper and boxboard in solid colors. Alone or in combination with other resins, zein may be used for impregnating and laminating purposes as well as other molding processes. Zein plastics may be molded.

Even the lowly potato is a source of chemurgic plastics. At a meeting during the past summer in Presque Isle, Maine, eight hundred Aroostook farmers and business men heard an announcement that a method has been developed for converting Irish potatoes into plastics. Responsible for the new process is Dr. Joseph Seiberlich, a German chemist residing in America. The plastic material, which can be made from culled potatoes, includes a type resembling crystal clear glass. The State Department of Agriculture and the Maine Development Commission have provided $5,000 to advance investigations and a pilot plant is under construction at Belfast.

One of the pioneer plastic materials was milk casein, yet for many years the production of casein plastics in this country has been relatively unimportant, their use being limited largely to the manufacture of buttons, combs and inexpensive jewelry. Eight years ago the United States was responsible for the production of only about one-eighth of the world total, but with improvements in the speed of making buttons and the consolidation of casein plastic plants with button factories, our production has more than doubled.

As in the case of all plastics, many problems remain for the casein manufacturer to solve. Dr. D. C. Carpenter, Chief in Research (Chemistry) of the Division of Dairying at the New York State Agricultural Experiment Station at Geneva, recently said of casein plastics:

"Some years ago casein plastics held a prominent commercial place in the plastics industry and used considerable casein from milk. The process for making



Courtesy Masonite Corp. Laurel, Miss.

casein plastic is a very old one and consists essentially in hardening a preshaped casin dough for four to eight months in a tank of formaldehyde and then finishing the hardened casein into buttons, etc., on a lathe. The process is too time-consuming to compete now with the newer plastics which may be molded in a few seconds into the finished article. The old casin plastic gave a beautiful product which, however, was somewhat brittle.

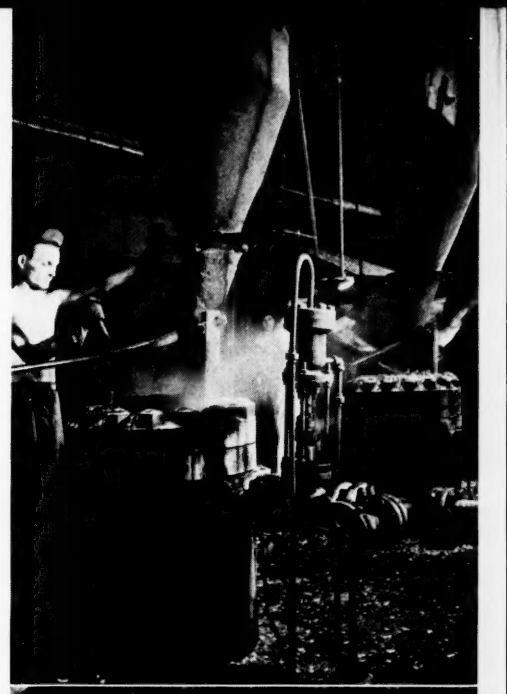
"Two improvements need to be made in casein plastics, a shortening of the time of manufacture, and the production of a less brittle material that may be molded. I believe that we can do both of these things. The idea hinges on the introduction of chemical groups in which there is free rotation about a carbon to carbon bond. This I have talked about quite freely for the past five years. The idea has been laughed at and branded as impossible by many who would not understand structural chemistry anyway. Last year, however, the du Pont Company came out with their Nylon which is flexible and unbreakable, and which contains a number of carbon to carbon bonds having free rotation. Since then there has been little criticism of the idea.

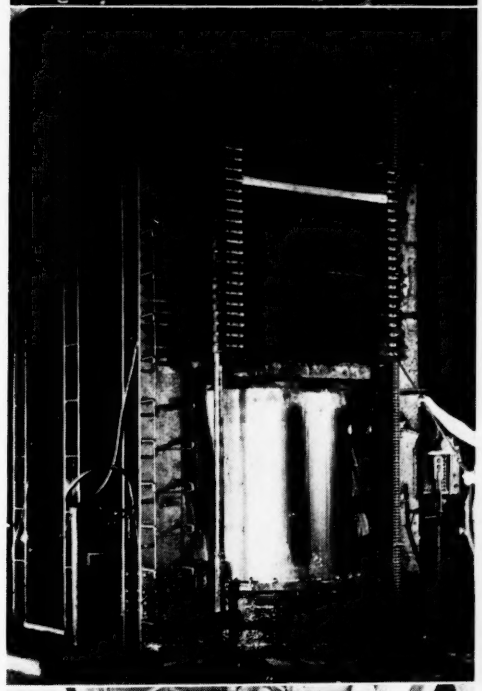
". . . I visualize the development of a flexible, non-breakable casein plastic that can be molded into the finished article or drawn into fibers and woven into cloth. The present method of making casein fiber is to coagulate a jet of prepared casein solution under formaldehyde. This gives a brittle fiber no matter how it is done or what modifying agents are in the formaldehyde bath. My idea is to draw the fibers from the flexible casein plastic, once the latter has been worked out. This is done with Nylon."

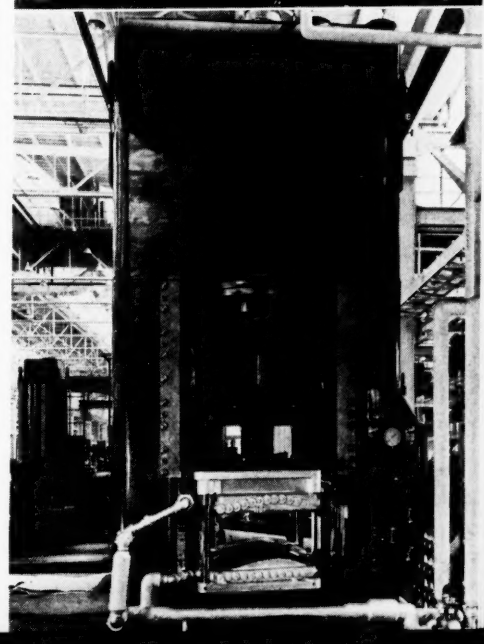
Dr. Carpenter's is one problem of the many that plastic investigators must face. While the use of plastics is not particularly new, it has only been in recent years that the general acceptance of plastics has resulted in large scale production. Plastic products offer good appearance, low conductivity of heat and electricity, resistance to acids, lightness of weight, ease of shaping and permanent finishes. The recent Senate Document 65, entitled "Regional Research Laboratories, Department of Agriculture," recognizes the importance of plastics, as well as the problems that must be solved. In a discussion of plastics, the document says:

"Developments in the plastics industry in the past few years have been amazing. These developments have resulted from intensive engineering work on pressing equipment as well as from improved properties and widened varieties of molding powders. The combined effect has been to lower the cost, improve the general properties and appearance of plastic products, and increase acceptance of plastics in everyday life. In the manufacture of fairly complicated small articles, the fabricating costs of which are high, plastic materials can outdistance most competition. However, in the manufacture of larger articles, such as furniture or structural materials the cost and consequently the acceptance, will be governed very largely by the cost of the materials from which the molding powders are made."

Top—"Loading the Gun"—a process in plastics manufacture at the Laurel, Miss., plant of the Masonite Corp. Center—A Masonite press in operation. Bottom—A press for molding plastic doors on the trunk compartment of automobiles at the Ford Motor Company







"Agricultural wastes have shown considerable promise in the production of low-cost plastics. Their use for this purpose would not only provide an outlet for them but would make possible important improvements in buildings and furniture construction."

The high cost of plastics, particularly of the larger pieces, has been the limiting factor in the acceptance of plastics in industry. One of the most important major problems facing American industry is to find raw materials sufficiently inexpensive to allow plastics to compete with products made from other resources.

One answer to this problem is lignin plastics. Wood plastics with a lignin base are being made at the Forest Products Laboratory at Madison, Wisconsin, at the Marathon Paper Mills, Rothschild, Wisconsin, and at the Masonite plant at Laurel, Mississippi. The Agricultural By-Products Laboratory at Ames, Iowa, has produced a lignin plastic, using sugarcane bagasse as the raw material, that should be of interest to automobile manufacturers. Although we have seen more and more plastics used in adding those touches that make our modern automobiles more luxurious than ever, there is still a great field for plastics in the automobile industry. Again, the question is one of price. Lignin plastics, such as that developed at Ames, do not have all the fine qualities of some of the plastics now generally accepted. They have a tendency to absorb moisture and warp. On the other hand lignin plastics cost only a fraction of the price of other plastics. A cheap plastic, with qualities adequate for the services to which it is put, answers a demand created by many industrialists, particularly manufacturers of automobiles.

Twenty-five per cent of all woody plants consists of lignin. Lignin has long been a waste product of paper mills, except for its occasional use as fuel or as a binder in road construction or linoleum manufacturing. Here is truly an enormous source of cheap raw material for

(Continued on page 54)

The South's Foreign Trade with South America

THE outbreak of hostilities in Europe has focussed renewed attention on the possibilities of further developing the trade between this country and South America. It is only natural that the Southern states will participate to a large extent in this because, with the current expansion of industry coupled with advantageous transportation facilities, the South's many ports are relatively closer to South American and contiguous countries.

In view of this it may be of interest to note that regular shipping schedules are in effect between 15 Southern ports and over 50 ports in South America and the West Indies. In addition, freight ships leave or arrive at 35 Southern ports in transit to virtually every port in the countries under discussion.

In 1937, the latest year for which statistics are available, imports and exports between South American countries and Southern ports on tramp ships as well as regular route vessels were 7,805,418 tons and 2,953,345 tons respectively. A breakdown of this trade follows.

NORFOLK, VA.

IMPORTS TO NORFOLK, VA. (TONS)

Misc.	Fertilizer	Manganese	Non-metallic Minerals	Animal Products	Provisions	Total	To and from
...	...	...	...	...	...	...	Canal Zone
...	...	...	11,169	...	...	11,169	Mexico
...	...	...	21,132	...	...	21,132	Aruba
...	...	...	...	...	233	233	Barbadoes
...	...	10,450	...	...	59,848	70,298	Cuba
...	...	...	...	...	4,938	4,938	Dominican Republic
...	...	...	...	...	...	...	Guadeloupe
...	...	...	...	...	2,617	2,617	Haiti
...	...	...	...	...	20	20	Jamaica
...	...	...	...	...	...	...	Martinique
...	...	...	...	...	...	...	St. Lucia
...	...	...	...	...	...	...	St. Thomas
...	...	...	...	...	100	100	St. Vincent
...	...	...	...	...	...	...	Trinidad
...	...	...	8,027	...	...	8,027	Turks Is.
9,226	9,683	...	...	8,509	4,954	32,372	Argentina
313	971	...	...	322	4,062	5,668	Brazil
32	781	...	...	1,439	1,768	4,020	Uruguay
...	...	...	...	...	...	...	Colombia
...	...	...	...	...	...	...	Br. Guiana
...	...	...	...	...	...	...	Surinam
1,000	64,666	...	...	...	...	65,666	Chile
...	...	...	...	...	...	...	Peru
10,571	76,101	10,450	40,328	10,270	78,540	226,260	TOTALS

EXPORTS FROM NORFOLK, VA. (TONS)

Total	Vegetable Products	Tobacco	Lumber	Coal	Metals & Mfrs.	Chemicals	Misc.
20,393	144	32	311	18,952	82	76	796
505	...	...	...	...	505	...	...
...	...	...	...	...	...	...	...
388	9	11	...	...	...	323	45
194,258	2	...	...	193,808	267	181	...
...	...	...	...	...	...	...	...
2,934	...	...	...	2,635	...	295	4
...	...	...	...	...	...	...	...
53,225	...	...	...	50,811	...	...	2,414
10,773	...	...	...	10,698	...	61	14
12,743	...	...	...	12,743	...	...	...
66,299	...	33	11	66,196	...	26	33
...	...	...	...	...	...	...	...
28,357	5	161	...	28,157	...	...	34
...	...	...	...	...	...	...	...
12,058	391	352	4,421	6,658	34	53	146
37,299	19	...	...	36,338	430	438	74
670	3	18	605	...	...	...	14
948	180	...	...	...	768	...	...
112	...	45	67	...	...	...	...
10	...	6	...	...	...	...	4
18	18	...	...	...	...	...	...
1,500	...	...	...	1,500	...	...	...
442,490	771	688	5,418	428,496	2,086	1,453	3,578

Although no exports were made from Richmond, Virginia, 10,962 tons of sugar were imported from Cuba.

MOBILE, ALA.

IMPORTS TO MOBILE, ALA. (TONS)

Misc.	Bauxite	Manganese	Sugar & Molasses	Bananas	Corn	Total	To and from
20	...	...	...	350	...	370	Br. Honduras
...	...	...	...	23,225	...	23,225	Guatemala
1,213	...	...	...	21,099	...	22,312	Honduras
2	...	...	...	1,915	...	1,917	Nicaragua
...	...	...	...	15,685	...	15,685	Panama
10,032	...	...	...	1,145	...	11,177	Mexico
...	...	...	...	...	...	...	Antigua
...	...	...	...	...	250	250	Aruba
...	...	...	...	...	...	...	Barbadoes
...	...	...	...	...	...	...	Cayman Brac
3	...	41,200	54,293	850	...	96,346	Cuba
...	...	...	...	...	...	...	Curacao
...	...	...	95	...	1,131	1,226	Dominican Republic
...	...	...	...	...	...	...	Grenada
...	...	...	...	...	...	...	Guadeloupe
...	...	...	...	...	...	...	Haiti
391	...	...	...	...	...	391	Jamaica
...	...	...	...	...	...	...	Martinique
...	...	...	...	...	...	...	St. Croix
...	...	...	...	...	...	...	St. Kitts
...	...	...	...	...	...	...	St. Lucia
...	...	...	...	...	...	...	St. Thomas
...	...	...	...	...	...	...	St. Vincent
...	791	...	...	...	...	791	Trinidad
603*	...	...	...	...	99,828	100,431	Argentine
81	...	...	...	...	...	81	Brazil
145	...	...	...	...	...	145	Uruguay
...	...	...	...	...	...	...	Colombia
16	22,141	...	...	...	...	22,157	Br. Guiana
...	44,756	...	173	...	...	44,929	Surinam
...	...	...	...	...	...	...	Venezuela
23,088**	...	...	...	...	...	23,088	Chile
35,594	67,688	41,200	54,561	64,269	101,209	364,521	TOTALS

*Includes 23 tons of chemicals. **Almost entirely chemicals.

EXPORTS FROM MOBILE, ALA. (TONS)

Total	Provisions	Naval Stores	Cotton	Lumber	Non-metallic Minerals	Metals & Mfrs.	Misc.
1	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...
42	...	...	...	...	19	17	6
4	2	...	...	...	...	...	2
...	...	...	...	...	...	...	...
1,961	...	...	...	776	...	...	446
44	...	...	...	44	...	...	...
3,566	23	...	...	1,985	51	1,462	45
424	...	...	...	328	...	...	96
10	...	...	...	...	...	...	10
14,320	...	125	281	8,880	5,034	...	...
4,011	306	46	23	2,749	631	93	163
1,818	...	52	...	931	44	539	252
19	...	...	...	19	...	...	...
3,778	40	...	...	3,640	...	77	21
2,766	...	52	575	1,584	...	84	471
17,056	...	270	62	9,776	6,522	101	325
2,990	44	...	...	2,917	...	17	12
326	...	...	...	23	214	85	4
76	...	...	...	76	...	...	...
82	...	...	...	82	...	...	...
125	...	...	...	13	...	112	...
445	...	...	...	434	...	...	11
10,214	...	11	...	1,448	2,000	10	6,745
65,654	...	1,801	...	62,315	266	1,106	166
2,255	...	966	...	208	...	1,060	21
11,434	...	132	...	11,261	...	17	24
1,783	...	...	...	...	...	1,783	...
817	...	...	...	528	207	16	66
2,108	...	...	...	...	2,028	41	39
10,291	...	152	105	6,396	86	3,201	351
...	...	...	...	...	...	...	...
158,420	415	3,607	1,046	116,413	17,102	10,560	9,277

(*Continued on page* 25)

IMPORTS INTO NEW ORLEANS (TONS)

NEW ORLEANS, LA.

EXPORTS FROM NEW ORLEANS (TONS)

Miscellaneous	Chemicals	Corn	Vegetable Oils	Petroleum and Products	Bauxite	Sugar and Molasses	Fibers and Mfrs.	Coffee	Lumber	Bananas	Total	To and from	Total	Cotton	Provisions	Naval Stores	Vegetable Products	Paper Stock and Mfrs.	Non-metallic Minerals	Machinery	Petroleum Products	Chemicals	Lumber	Metals and Mfrs.	Miscellaneous
2,674	...	...	...	...	...	...	...	...	25,590	18,245	46,909	British Honduras	5,188	...	636	...	...	...	307	605	886	...	1,260	20	1,474
3,934	...	...	...	...	...	90	1,323	27,650	326	16,233	49,556	Canal Zone	36,512	2,354	2,538	1,964	1,474	389	2,739	839	2,429	1,437	3,485	9,668	7,196
6	...	...	...	...	...	...	...	20	...	12,066	12,092	Costa Rica	649	...	202	11	...	...	...	...	33	...	218	...	185
...	...	...	...	...	...	...	...	1,395	...	...	1,395	El Salvador	...	...	...	...	...	...	...	...	...	...	...	...	...
335	...	...	...	...	...	...	...	7,854	30	66,997	75,216	Guatemala	15,959	544	1,733	...	507	...	482	160	2,150	323	1,858	7,538	1,643
2,789	...	...	...	...	...	...	...	888	71	59,010	62,788	Honduras	22,364	10	1,177	14	835	71	2,728	32	5,884	1,296	5,563	973	3,681
931	...	...	...	...	...	...	...	410	100	57,359	58,800	Nicaragua	8,567	...	1,407	...	...	13	222	15	3,715	120	122	140	2,802
2,600	...	...	...	...	...	...	...	...	...	18,628	21,228	Panama	520	...	...	...	...	...	...	...	18	...	141	...	361
10,003	...	...	...	104,552	...	...	52,571	8,164	2,064	143,006	320,360	Mexico	56,507	441	1,101	71	143	4,535	4,060	6,423	7,016	1,389	16,526	7,120	7,682
...	...	...	...	...	...	...	...	...	...	...	...	Antigua	40	...	...	...	...	...	...	...	...	...	40	...	...
...	...	...	...	14,386	...	...	...	...	...	...	14,386	Aruba	18,783	...	130	...	...	...	7,117	...	8,600	...	2,642	12	282
2	...	...	...	...	...	60	...	...	...	...	62	Barbadoes	1,898	...	454	...	...	15	...	...	107	...	1,050	...	272
16,066	...	...	...	1,217	...	848,203	4,580	1,755	1,319	...	872,140	Cuba	148,692	2,782	42,004	821	9,597	3,192	7,648	1,744	4,934	6,398	58,752	3,836	7,164
57	...	...	...	...	...	...	2	275	...	...	334	Curacao	3,947	...	382	78	...	...	212	106	53	...	2,082	200	834
...	...	...	...	...	...	...	...	...	...	...	...	Dominican Republic	997	...	66	...	11	15	168	...	286	...	70	171	210
...	...	...	...	...	...	...	...	...	...	...	...	Grenada	19	...	...	...	...	...	...	...	...	...	17	...	2
...	...	...	...	...	...	...	...	...	...	...	...	Guadeloupe	1,555	...	197	...	...	...	...	...	24	...	1,260	...	74
24	...	...	...	...	...	...	1,431	166	...	...	1,627	Haiti	2,228	...	967	...	10	6	65	...	198	...	651	...	331
1,397	...	...	...	...	...	...	...	...	...	...	1,397	Jamaica	7,835	...	421	23	...	10	16	...	1,041	1,134	4,017	79	1,094
136	...	...	...	...	...	...	...	...	...	...	136	Martinique	1,439	...	207	...	...	...	...	...	501	...	582	...	149
...	...	...	...	...	...	...	...	...	...	...	...	Montserrat	19	...	...	...	...	...	...	...	...	...	19	...	...
156	...	...	...	...	133	1,679	2,083	570	...	...	4,576	St. Vincent	23	...	...	...	...	...	...	...	...	...	...	...	23
33,285	...	157,459	...	...	...	...	614	...	...	...	191,358	Trinidad	7,565	...	21	43	...	55	1,725	78	17	800	3,331	235	1,260
29,939	...	363	483	...	...	...	...	142,790	3,424	...	149,557	Argentina	64,654	...	159	1,200	848	565	6,142	15,171	3,814	3,830	28,716	2,867	1,342
6,131	...	...	...	...	...	...	...	...	...	...	6,131	Brazil	22,099	...	85	1,200	...	535	1,135	3,158	10,767	839	277	3,564	539
...	...	...	...	...	...	...	...	39	...	...	39	Uruguay	7,304	62	875	126	458	...	232	254	1,497	99	2,637	864	200
65	...	...	...	...	29,563	...	...	...	...	...	29,628	Colombia	117	...	...	28	...	...	...	49	...	...	...	...	40
52	...	...	...	...	220,630	1	300	89	570	...	221,642	British Guiana	949	...	12	...	...	...	...	48	...	62	533	71	223
125	...	...	...	...	...	...	...	15	...	...	140	Surinam	2,979	...	38	...	...	...	180	105	2,017	99	...	115	425
...	21,292	...	...	...	...	...	...	...	...	...	21,292	Venezuela	16,325	...	809	75	...	164	484	621	...	178	10,133	585	3,276
...	...	...	...	...	...	...	...	...	...	...	...	Chile	...	...	...	...	...	...	...	...	...	...	...	...	...
110,707	21,292	157,822	483	120,155	250,326	850,033	62,904	192,080	33,494	391,544	2,162,789	TOTALS	455,633	6,193	55,641	5,654	13,883	9,565	35,663	29,408	55,987	18,004	145,982	38,058	42,764

IMPORTS INTO BALTIMORE (TONS)

BALTIMORE, MD.

EXPORTS FROM BALTIMORE (TONS)

Miscellaneous	Fertilizer	Iron Ore	Grain	Sugar & Molasses	Manganese	Petroleum & Products	Chrome	Metals & Mfrs.	Bananas	Total	To and from	Total	Sugar & Molasses	Non-metallic min.	Metals & Mfrs.	Iron & Steel & Mfrs.	Fertilizer	Chemicals	Lumber	Coal & Coke	Copper	Tin Plate	Misc.
160	...	...	...	...	...	...	...	...	...	160	Canal Zone	3,557	281	1,248	42	1,175	...	183	...	...	...	...	638
...	...	...	...	...	...	...	...	...	6,433	6,433	Guatemala	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	9,807	9,809	Honduras	224	...	...	...	...	...	224	...	...	...	...	...
1,735	...	...	...	...	...	60,279	...	3,000	300	65,314	Mexico	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	256,831	...	...	...	256,831	Aruba	2	...	...	...	2	...	...	...	...	...	...	...
6,930	...	354,900	...	246,594	43,380	...	18,429	1,961	45,960	718,154	Cuba	18,206	...	...	...	1,023	...	...	...	17,176	...	...	7
...	...	...	...	...	...	...	...	...	...	...	Curacao	616	257	...	..	55	...	...	...	...	...	...	304
...	...	...	...	53,067	...	...	...	...	...	53,067	Dominican Republic	...	...	...	...	...	...	...	...	...	...	...	...
3,548	...	...	...	...	...	...	...	...	...	3,548	Haiti	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	Jamaica	300	...	...	...	...	300	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	7	St. Croix	451	...	155	..	70	...	...	...	...	...	...	226
...	...	...	...	...	...	...	...	...	...	...	St. Thomas	169	...	...	..	15	...	...	...	...	...	...	154
...	...	...	...	...	...	...	...	...	...	...	Trinidad	106	...	...	..	95	...	...	...	...	...	...	11
19,854	3,536	...	57,399	...	...	...	...	...	...	80,789	Argentina	25,726	...	1,251	..	11,580	...	...	185	6,582	...	...	197
9,071	86	...	...	...	117,913	...	...	...	...	127,070	Brazil	36,169	...	1,276	..	23,924	...	134	12	...	40	10,087	195
1,068	296	...	...	...	...	...	...	...	...	1,364	Uruguay	6,224	...	78	..	2,178	...	...	35	...	...	3,917	16
...	...	...	...	...	...	...	...	...	20,401	20,401	Colombia	4,306	...	106	..	4,128	...	55	...	...	...	...	17
...	...	...	...	...	...	455,465	...	1,315	...	456,780	Venezuela	43,236	...	7,794	..	26,626	...	189	549	...	87	155	5,094
225	20,069	1,129,350	...	...	200	...	...	...	...	1,149,844	Chile	9,522	...	721	..	5,183	...	92	...	980	...	2,475	71
...	...	...	...	...	...	...	...	...	...	...	Ecuador	149	...	45	..	104	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	3,709	3,709	Peru	2,151	...	1,638	..	163	...	291	...	...	...	46	13
42,600	23,987	1,484,250	57,399	299,661	161,493	772,575	18,429	9,985	82,901	2,953,280	TOTALS	151,114	538	14,312	42	76,321	300	1,168	781	24,738	127	16,680	6,943

(Continued on page 26)

The South's Foreign Trade With South America

(*Continued from page 25*)

IMPORTS TO WILMINGTON, N. C. (TONS) — *WILMINGTON, N. C.* — EXPORTS FROM WILMINGTON, N. C. (TONS)

Misc.	Fertilizer	Sugar & Molasses	Total	To and from	Total	Cottonseed Oil Cake	Nitrate of Soda	Super Phosphates
...	...	2,171	2,171	Barbadoes	...	...	...	...
100	...	12,013	12,113	Cuba	3,488	357	180	2,951
...	...	139	139	St. Vincent	...	...	...	...
...	95,846	...	95,846	Chile	...	...	...	...
100	95,846	14,323	110,269	TOTALS	3,488	357	180	2,951

IMPORTS TO CHARLESTON, S. C. (TONS) — *CHARLESTON, S. C.* — EXPORTS FROM CHARLESTON, S. C. (TONS)

Miscell.	Petroleum & Products	Fertilizer	Sugar	Bananas	Total	To and from	Total	Lumber	Coal	Metal & Mfrs.
...	...	...	...	...	...	Canal Zone	89	89	...	...
...	...	...	...	...	...	Costa Rica	3,088	3,088	...	...
...	...	...	...	17,390	17,390	Guatemala	3,372	3,372	...	...
309	...	...	...	14,926	15,235	Honduras	3,240	3,240	...	...
...	...	...	...	...	...	Panama	3,076	2,861	...	215
...	10,060	...	...	...	10,060	Aruba	...	...	...	...
...	...	...	16,476	...	16,476	Cuba	21,103	3,295	17,808	...
...	...	...	...	...	...	Guadeloupe	1,083	1,083	...	...
...	...	...	...	...	...	Martinique	251	251	...	...
...	...	...	...	...	...	St. Croix	26	26	...	...
...	...	...	...	...	...	Trinidad	147	147	...	...
1,000*	...	...	...	...	1,000	Turks Is.	...	...	...	...
...	..	919	...	...	919	Argentina	9,269	9,269	...	...
...	...	...	...	...	...	Brazil	43,072	...	43,072	...
...	...	...	...	...	...	Uruguay	871	871	...	...
...	...	...	...	15,750	15,750	Colombia	...	...	...	...
...	101,563	...	...	...	101,563	Venezuela	17,308	17,139	...	169
...	...	93,360	...	...	93,360	Chile	...	...	...	...
1,309	111,623	94,279	16,476	48,066	271,753	TOTALS	105,995	44,731	60,880	384

*Almost wholly non-metallic minerals.

IMPORTS TO SAVANNAH, GA. (TONS) — *SAVANNAH, GA.* — EXPORTS FROM SAVANNAH, GA. (TONS)

Miscell.	Fertilizer	Crude Petroleum	Sugar	Total	To and from	Total	Naval Stores	Lumber	Metals & Mfrs.	Miscell.
...	...	...	...	...	Canal Zone	2,066	1,087	641	7	331*
...	...	19,189	...	19,189	Mexico	...	...	...	...	...
918	...	...	119,069	119,087	Cuba	7,881	1,793	504	1	5,583
...	...	...	700	700	Dominican Republic	...	...	...	...	...
...	...	...	...	...	Argentina	8,861	988	7,764	108	1
...	...	...	...	...	Brazil	2,319	2,140	20	143	16
...	...	...	...	...	Uruguay	1,001	683	318	...	...
...	...	...	...	...	Colombia	524	...	...	524	...
...	...	101,476	...	101,476	Venezuela	...	...	...	...	...
5	106,793	...	...	106,798	Chile	...	...	...	...	...
923	106,793	120,665	119,769	347,250	TOTALS	22,652	6,691	9,247	783	5,931

*Includes 161 tons of cotton.

JACKSONVILLE, FLA.

IMPORTS TO JACKSONVILLE, FLA. (TONS)

Miscell.	Fertilizer	Bananas	Provisions	Total	To and from	Total	Naval Stores	Lumber	Non-metallic Minerals	Metals & Mfrs.	Miscell.
...	...	...	...	...	Bermuda	1,920	...	1,920	...	...	...
15	...	...	...	15	Canal Zone	3,178	874	2,276	...	8	20
...	...	...	...	...	Aruba	10	...	...	...	6	4
...	...	42,503	12,292	54,795	Cuba	2,656	196	2,412	...	...	48
...	...	352	...	352	Dominican Republic	...	...	...	...	...	...
...	...	...	...	...	Martinique	3,000	...	3,000	...	...	...
...	...	...	...	...	New Providence	1,018	...	864	84	5	65
*455	...	...	...	455	Turks Island	...	...	...	...	...	...
5,948	7,550	...	8,158	21,656	Argentina	18,749	4,051	14,661	...	...	37
3	334	...	8,415	8,752	Brazil	3,512	3,117	...	15	310	70
277	419	...	1,994	2,690	Uruguay	1,775	401	1,281	93	...	...
...	1,075	...	...	1,075	Venezuela	...	...	...	...	...	...
...	37,743	...	...	37,743	Chile	...	...	...	...	...	...
6,698	47,121	42,855	30,859	127,533	TOTALS	35,818	8,639	26,414	192	329	244

*Consists almost wholly of nonmetallic minerals.

PORT EVERGLADES, FLA.

IMPORTS TO PORT EVERGLADES, FLA. (TONS)

Misc.	Fertilizer	Liquid Binder	Sugar & Molasses	Pineapple	Total	To and from	Total	Provisions	Lumber	Non-metallic Minerals	Metals & Mfrs.	Chemicals	Misc.
...	...	3,828	...	...	3,828	Mexico	...	...	...	...	...	...	...
5,213	968	...	5,026	26,305	37,512	Cuba	60,315	9,468	20,069	10,411	10,087	2,923	7,357
5,213	968	3,828	5,026	26,305	41,340	TOTALS	60,315	9,468	20,069	10,411	10,087	2,923	7,357

(*Continued on page 38*)

Thrift Is Better Than Taxation

BY

Dr. John J. Wicker*

EVERY worthwhile man wants security—or he should want it. There is something wrong with a man who does not want it. But is he made right by having it forced upon him?

The finest way to inaugurate old age and all other security is for the young man to voluntarily put his own sweat into it.

He who sweats and saves while in his youth will have security in his old age and he who refuses to do it has no right to another man's security.

Unless you put the sweat from the brow of youth in the bank of self-denial you have no right in your old age to draw your security check on the back of another man's sweat.

The spendthrift has no right to the money in the bank of thrift.

Aspiration saturated with perspiration will bring realization.

Youthful sweat sanctifies old age and makes the evening hours a joy to the end of life.

A man who puts his youthful years into his old age will be young when he is old. A man's life is made long while he is young—so is his economic security.

Security should be settled when a boy is in his teens. His parents should teach him how to have security and the public school, college, and University also should teach him.

Prevention of poverty is better than enforced philanthropy; thrift is better than taxation.

Better create a banker than feed a beggar. The more you do for the first the less you have to do for the last.

What will be tomorrow or what will tomorrow be? That depends on our yesterdays. The foundation of the future is always built on our past. This runs through every strata of life. It goes down in future generations. A great biology makes a noble biography. It is a story of struggle. Back of the electric light is a long line of candle lights, and many flickering oil lamps.

In William Shakespeare many hereditary streams of yesterday converging in his brain made possible the genius of the man.

Every thought is, in a sense, the father of the next one—good or bad—and the father lives on in his offspring.

The tree of today is made strong by the roots it grew on yesterday and so gives its fruit for tomorrow.

There are two ways we can have social security.

One is by legislation. This the government is now undertaking. This is a plan of paternalism. It is the government requiring the individual to regulate his private affairs according to governmental dictation.

Perhaps the political agitation on this subject will do good, but it cannot be settled successfully by legislation.

We hear much talk today against capitalists, but what does capitalism do but think and provide the means and opportunity for the other man better than he can for himself. Thus the way is opened for better standards of living and better living. But for the capitalist, social security, along with all other security would be impossible.

If it were not for wise heads, hands would have little to do.

The more paternalism grows in government the more danger there will be of making babies of men and women and the poorer citizens they will become. Character and education are far more important than cash. Character is the only thing that can make lasting cash values. The more dependent you make people the less you are doing for them. Get a man to voluntarily supply his own needs and you have a self respecting citizen.

A congressman from my own district said, "A beneficent government may become a curse,—a people that must be permanently nursed must be content with a sick society. You need to disseminate that political philosophy which will bring men once again to a true appreciation of the sturdy virtue of self reliance."

Beware of any scheme that will tempt men to do less and get more.

But the way to get it is to go after it TODAY. We are always tempted to imagine what we are going to do tomorrow instead of doing something today. Industry and brains will do the job.

Nothing will help brains to function like work and plenty of it, and it is largely a case of education. If the lower animals had sense enough they could successfully sue man for slander.

Big brains and big business are partners. They form firms with fewest failures. Such firms invite young men, who really want to work, to become partners. Common sense and the will to work are the chief requisites.

Communism and common sense never live in the same head—one will always run out the other—take your choice.

No legislation or rule of the fight can make the inferior man the champion—the best man wins.

The shortest and surest way to get rid of relief is to release brains—educate.

The head decides what we are, where we go, and what we do.

A little boy was learning his Sunday School lesson. His mother said, "Son, what is the chief end of man?" and the boy replied promptly, "The head end." Right!

In the great struggle for existence and the survival of the fittest there will always be a certain percentage of unfit, but the nobler the struggle the fewer will be the unfit.

I have observed two things: If a man does not save on a small income he will not do so on a large one. And if he will not give on a small income he will not do so on a large one. Too many people are ruled by their income, rather than being masters of what they get. "A man is rich in proportion to what he is able to do without."

How did others get security? There are millions who have it. It is cheap talk to say they are capitalists, crooks, and criminals. They may be found in all walks of life, and do not belong to any particular class.

Some inherited security, others struck luck in oil or something else, but the vast majority commenced with nothing, and practiced the correct laws of life that bring success. No sleight-of-hand Houdini trick, political or even religious, can successfully violate the fundamental laws of successful existence. Remember that in obeying these laws, which accumulate cash, you are also exercising those laws essential to the building of character.

Suppose you make a survey of all the people you know, who started life with absolutely nothing, later had very small incomes, and by and by had economic independence. How did they get it?

It is amazing how many millions of people who have, by devotion to their daily tasks and the practice of economy and thrift, not only gained security in time but often made large fortunes.

Youth needs a challenge. Nothing is more needed in a democracy. It will work miracles.

Challenge "flaming youth." They will

(Continued on page 56)

**Reprints of the articles by Dr. Wicker, which have been appearing in the* MANUFACTURERS RECORD, *are available at* $1.50 *per hundred and* $10.00 *per thousand. His "Is It A Crime To Have A Dollar?" has been ordered from all parts of the United States and soon will start on the second hundred thousand although it appeared nearly sixteen months ago.*

Eleven Months' Contracts Greater Than Entire Total for 1938

CONSTRUCTION in the Southern States, despite a decrease in November, is now ahead of the total for the entire year of 1938. The current $859,190,000 total is practically up to the eleven-month figure for the record construction year of 1936.

Southern contracts during November, amounted to $66,728,000, and while lower than the figure for the preceding month, it is but slightly below the monthly average for this year.

The table following gives the monthly totals for this year and last.

Month	1938	1939
January	$59,353,000	$73,076,000
February	48,254,000	62,658,000
March	55,079,000	72,134,000
April	67,558,000	72,697,000
May	44,833,000	112,911,000
June	68,679,000	59,004,000
July	76,587,000	85,102,000
August	74,359,000	81,333,000
September	71,996,000	82,378,000
October	75,360,000	91,169,000
November	73,246,000	66,728,000
December	116,177,000	.....
Total	$831,481,000 (12 months)	$859,190,000 (11 months)

The difference between the current eleven-month figure and last year's total contracts in favor of the former is readily apparent from the above. A study of the figures shows that the low point in construction came in 1938 in May; in 1939 in June. The most intense activity, as far as contracts are concerned, occurred in December of 1938. The peak for the eleven months of this year was in May, with the twelfth month not expected to surpass this figure.

Private contracts in November represented a litle more than one-half of the total. This position was about ten per cent down the scale from the one occupied by private contracts during the preceding month. Private building, although slightly lower than in October, was relatively stable, with public building in a little better position. Road construction continued its slow upward climb.

Industrial contracts, although lower than for the preceding month but higher than any other month of the year, included expansions in the South's aviation, food products, cement, gasoline, paper and rayon.

Ethyl Gasoline Corporation's $4,000,000 expansion for manufacturing tetra-ethyl lead at Baton Rouge, La., was the largest single project for which the cost was announced, although Alabama Power Company's 1940 program is set at $6,165,000. A 450-mile pipeline across Florida, Alabama and Georgia for the Gulf Oil Corp., however, was an outstanding development. Lone Star Gasoline Co., Pittsburgh, Pa., will erect a $190,000 distillate recovery plant in the Cayuga field, in East Texas.

The award was made for building construction in connection with the $1,000,000 plant being established at Nashville, Tenn., by the Aviation Manufacturing Corp. Celanese Corporation of America is making $100,000 improvements at Cumberland, Md. Contracts were let by the Lone Star Cement Co., Manchester, Texas, for additional facilities to cost in the neighborhood of $125,000.

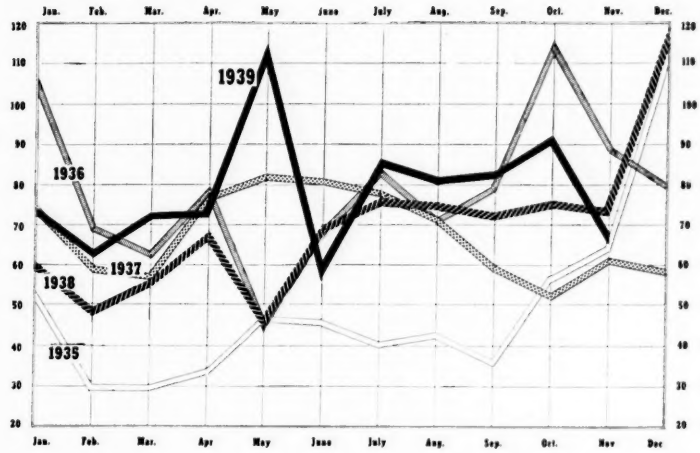
An exchange to be erected at Memphis, Tenn., by the Southern Bell Telephone & Telegraph Co., will involve a $500,000 expenditure. Chesapeake & Potomac Telephone Co., at Baltimore, is making preparations to build a $1,000,000 structure. The contract for an addition to the St. Louis, Mo., Coca Cola plant involved $100,000. Brunswick Pulp and Paper Company's program at Brunswick, Ga., is expected to cost $500,000. Pollock Paper & Box Co., Houston, Texas, will spend $250,000. A $200,000 milk condensery is to be erected at Statesville, N. C., by Carnation Co., Milwaukee. The Gulf, Mobile & Ohio fruit warehouse at Mobile, Ala., is to cost $250,000.

More than half of the private building figure of $12,095,000 went for residential construction, commercial structures oc-

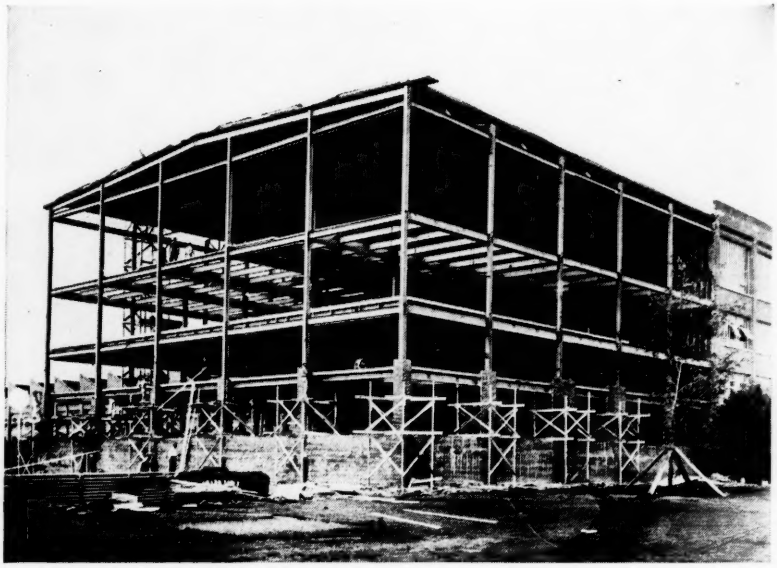
Blast furnace of Republic Steel Corporation's improved and expanded plant at Gadsden, Ala., which was formally put in operation on November 21

cupying the second place in this field. Among the active residential projects were the Montezuma Hotel, Andalusia, Ala., $250,000; $100,000 Bland projects at Durham and Charlotte, N. C.; a $190,000 building at Augusta, Ga., for the Forest Hill Apartment Corp.; the four Auburn Gardens apartment buildings, Alexandria, Va., to cost $500,000; the $100,000 Court Hotel at Galveston, Texas; McCoy Moretz's 50-dwelling project house, Baltimore, Md.; a $1,000,000 dwelling development at Miami, Fla., for Biscayne Sales Co.

Commercial and assembly projects costing over $100,000, include those at: Longview, Texas, for M. E. Moses Co.; Kansas City, Mo., for Bertram Rosenberg and Associates; St. Louis, Mo., for Pilgrim Congregational Church; Birmingham, Ala., for Walgreen Drug Co.; St. Louis, Mo., for Stix, Baer & Fuller Co.; at Southern Pines, N. C., for Clifford Sloan; Clayton, Mo., for Clayton Plaza.



Construction in the South



Addition to the Goodyear Tire and Rubber Company's plant at Gadsden, Alabama.

Dist. of Col.	281,000	2,247,000	5,237,000
Florida ...	224,000	402,000	6,768,000
Georgia ...	1,203,000	993,000	14,071,000
Kentucky .	321,000	70,000	4,086,000
Louisiana .	4,456,000	245,000	10,499,000
Maryland .	10,408,000	345,000	19,397,000
Mississippi	63,000	345,000	1,477,000
Missouri ..	871,000	1,050,000	4,867,000
N. Carolina	160,000	737,000	15,985,000
Oklahoma .	.....	825,000	2,710,000
S. Carolina	100,000	827,000	4,022,000
Tennessee .	157,000	560,000	6,497,000
Texas	687,000	2,065,000	14,636,000
Virginia .	1,294,000	922,000	21,826,000
W. Virginia	1,058,000	425,000	6,580,000
Total	$22,053,000	$12,600,000	$154,769,000

Roads, Streets and Bridges

(Roads, Streets, Paving, Viaducts)

	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1939
Alabama ..	$287,000	$731,000	$11,600,000
Arkansas ..	926,000	253,000	2,745,000
Dist. of Col.	122,000	550,000	2,651,000
Florida ...	501,000	10,631,000	6,590,000
Georgia ...	187,000	.....	6,305,000
Kentucky .	899,000	1,985,000	10,558,000
Louisiana .	1,786,000	1,209,000	6,100,000
Maryland .	.....	3,738,000	9,447,000
Mississippi	10,000	969,000	21,354,000
Missouri ..	460,000	445,000	8,407,000
N. Carolina	243,000	2,141,000	8,579,000
Oklahoma .	1,074,000	778,000	4,199,000
S. Carolina	899,000	756,000	3,609,000
Tennessee .	42,000	.....	4,160,000
Texas	1,980,000	4,940,000	24,434,000

(*Continued on page 32*)

Southern Construction (by States)

	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1939
Alabama ..	$1,308,000	$4,190,000	$47,410,000
Arkansas ..	1,727,000	841,000	17,511,000
Dist. of Col.	3,412,000	3,236,000	80,602,000
Florida	4,491,000	15,913,000	63,939,000
Georgia ...	5,954,000	4,453,000	55,648,000
Kentucky ..	2,608,000	3,172,000	28,799,000
Louisiana ..	8,304,000	2,903,000	63,738,000
Maryland ..	13,491,000	7,061,000	54,686,000
Mississippi	1,257,000	2,732,000	34,286,000
Missouri ..	3,667,000	3,552,000	36,852,000
N. Carolina	1,710,000	4,942,000	57,470,000
Oklahoma .	1,875,000	6,665,000	16,984,000
S. Carolina	1,495,000	22,703,000	53,369,000
Tennessee .	3,139,000	3,309,000	38,970,000
Texas	7,901,000	15,768,000	120,949,000
Virginia ..	3,196,000	29,743,000	59,627,000
W. Virginia	1,193,000	2,669,000	28,350,000
Total	$66,728,000	$133,852,000	$859,190,000

Industrial

(Industrial, Electric Railways, Railroads, Buses, Telephones, Docks, Steamships)

	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1939
Alabama ..	$585,000	$517,000	$14,096,000
Arkansas ..	185,000	25,000	2,015,000

Statistics of South's Construction

	Contracts Awarded November, 1939	Contracts to be Awarded	Contracts Awarded First Eleven Months, 1939
PRIVATE CONSTRUCTION			
BUILDING			
Assembly (Churches, theatres, auditoriums, fraternal)	$1,309,000	$2,205,000	$15,045,000
Commercial (Stores, restaurants, filling stations, garages, etc.)	3,523,000	1,800,000	29,112,000
Residential (Apartments, hotels, dwellings)	6,652,000	5,352,000	87,224,000
Office	611,000	77,000	16,504,000
	$12,095,000	$9,434,000	$147,885,000
INDUSTRIAL	$22,053,000	$12,600,000	$154,769,000
PUBLIC CONSTRUCTION			
BUILDING			
City, County, State, Federal	$6,995,000	$11,541,000	$110,720,000
Housing	3,876,000	7,980,000	65,544,000
Schools	2,054,000	3,965,000	59,889,000
	$12,925,000	$23,486,000	$236,153,000
ENGINEERING			
Dams, Drainage, Earthwork, Airports	$4,841,000	$5,091,000	$59,432,000
Federal, County, Municipal Electric	3,645,000	22,693,000	83,378,000
Sewers and Waterworks	1,472,000	6,966,000	26,307,000
	$9,958,000	$34,750,000	$169,117,000
ROADS, STREETS AND BRIDGES	$9,697,000	$53,582,000	$151,266,000
TOTAL	$66,728,000	$133,852,000	$859,190,000

Republic Steel's Alabama Plant Expansion

REPUBLIC Steel Corporation's improved and expanded plant at Gadsden, Alabama, was formally put into operation Tuesday, November 21.

Following an extended inspection of the mills the guests attended a luncheon given by the Gadsden Chamber of Commerce in honor of R. J. Wysor, President of Republic, and C. M. White, Vice-President in Charge of Operations.

This marked the completion of a major expansion and development program started when Republic acquired the Gulf States Steel Company in 1937. Since that time Republic has increased the open hearth capacity of the plant more than 40 per cent to 47,500 tons per month and increased the capacity of the sheet mills 28 per cent to 9,000 tons per month.

It has also completely overhauled and widened the plate mill to roll plates 106 inches wide—installed one of the largest bolt and nut factories in the South and in practically every department of the plant made other improvements to meet the South's greatly increased demand for steel products. In addition, Republic's subsidiary, the Truscon Steel Company, has completed the installation adjacent to the steel plant of two automatic welding machines for making wire mesh used in the reinforcement of concrete roads and structures.

There is probably no steel district so independent of outside sources of supply as that of Northern Alabama. Here in a comparatively small area are found all three of the basic materials required for iron and steel manufacture — iron ore, coal and limestone. These three materials are smelted to form pig iron which in turn is further refined and processed to be shipped out of Gadsden as a complete line of semi-finished and finished iron and steel products.

Including those items produced at Gadsden for many years Republic is now equipped to supply from its Gulfsteel Division plant—plates, rods and bars of all shapes, sheets, including galvanized sheets, wire and wire products, including barbed wire, fencing and nails, roofing materials and steel shingles.

The open hearth capacity of the plant was increased by the construction of two new furnaces, each of 150-ton capacity. This increased the number of open hearths from six to eight. To accommodate the new furnaces, the open hearth building was extended 264 ft. and a new 7½-ton floor charging machine and a new 210-ton crane were installed.

Inside one of the new buildings at Republic Steel's Gadsden, Ala., plant showing two 225-ft. long machines for making wire mesh used in concrete reinforcement.

The 28 per cent increase in the capacity of the sheet mill required extensive additions and alterations, not only to the sheet mill and building proper, but also to the furnace building, the pickling building, the box annealing building, and the sheet warehouse shipping building. Each of these buildings was extended, some of them more than 300 ft. A new heating furnace was installed and a second pickling unit and a latest type galvanizing machine were added.

The new galvanizing machine delivers sheets at the rate of 150 ft. per minute. Equipment has also been installed for the manufacture of Republic's specially designed patent roofing Triple Drain and More-drain. This machine will have a capacity of several hundred tons a month.

The plate mill is built for interchangeable operation. It can produce either sheared plate up to 106 inches wide or universal plate up to 60 inches wide.

The plate mill building was extended and an extra reheating furnace installed. The plate mill warehouse and shipping building was extended over 408 feet.

The bolt and nut plant with approximately 50 machines has a capacity of 1,000 tons per month. Facilities for making bolts and nuts by the hot forging process were installed at the end of the bar mill, while those made by the so-called "cold" process are housed in a new building. It is planned that this new building will become the first wing of an even larger bolt and nut factory.

The two huge machines installed by the Truscon Steel Company for making electric welded wire mesh are housed in a new building 408 x 72 feet. The stock is stored in a crane runway yard 360 x 72 feet. The new machines which are automatic in their operation can weld together either wire or rods.

Together with the reels which feed the wire to the machine and the coilers and shears, the machines are some 225 feet in length. Installation of this equipment at Gadsden was prompted by the rapidly growing use of this type of concrete reinforcement by many highway departments in the Southern States.

Oklahoma Inquires About New Industries

BY
J. Gilbert Hill, Oklahoma City

OKLAHOMA, which celebrated the Golden Anniversary of one of the greatest races for free land in history this year, began a run of an entirely different sort in a 12-car Pullman train, October 6-16.

In ten days, 109 Oklahomans, including Governor Leon C. Phillips, toured nine Southern states, visited 17 cities, traveling more than 3,700 miles "just looking."

The trip came about because Oklahoma had become convinced that it was not receiving its share of new industries in the decentralization which has been in progress now for several years.

Every observer who made the trip came back with a different story as to why. The tour was organized, not as a drive to "go get factories" but as a unified, statewide, fact finding expedition. On the train were men from Oklahoma City, Tulsa, Pawhuska, Stillwater, Enid, Muskogee, Sand Springs, Blackwell, McAlester, Bartlesville, Duncan, Vinita, Clinton, Claremore, Pryor, Tahlequah, and Eufaula—just "Oklahomans."

They saw the new paper mill at Lufkin, Texas—The Houston and New Orleans ports; the results of chemurgy in Laurel, Mississippi, steel mills in Alabama, a shirt factory at Atlanta; hosiery, textile, rayon, and furniture mills in the Carolinas, and Virginia. They then came back through Tennessee, making stops at Knoxville, Chattanooga, and Nashville.

Strangely, they came back with the general impression that they do not care to "bring in" factories. They found that the most profitable industries are the ones the South has developed for itself.

They do believe that they can use some "Yankee" bankers who understand when an industrial investment is a good one. They even could welcome a few Yankees down as managers of industries of kinds which are unfamiliar now in the South.

But, they came back convinced that if the state hasn't been receiving its share of industries it simply is because it has been too busy developing its oil and agriculture to pay any attention to manufacturing.

They found answers to some of their questions. They found out that freight rates do discriminate against the South. They found, too, that a properly organized and managed local industry could offset even that factor.

They found that Oklahoma's rapid development, and brief history, had brought about certain legal difficulties—but they took real hope from the fact that decentralization of industry is going farther than moving from big cities in the North to big cities in the South. If industry must move to rural communities, then the larger industrial centers can count upon the political support of the smaller centers to change such laws. With the governor along, he and legislative leaders learned first hand, too, about the difficulties.

It was a run very similar to the land opening of 1889. The Industrial Opportunity Tour returned to find that they had plenty of assets, and that it will take only work and time, to turn them into wealth and profits.

Facts on Unemployment Wanted

A letter from a prominent Southern business man directs attention to what has been somewhat of a mystery to a great many. It may be difficult to definitely ascertain the number of unemployed people in the United States, but the various estimates that are given from time to time either don't add up, or do not check with other facts.

Attempt was made in 1937 by Act of Congress to find out the true facts about the unemployed, but it was recognized at the time it was more of an estimate than complete data.

The letter follows:

"There has just come to my notice a copy of a Social Security Board report. Something in connection with this unemployment situation, and the statistics which are being given out, seems to me to need considerable investigation.

"In the first place I do not imagine the number of folks available for work in 1939 is proportionately greater than that during 1929. I notice in the trade papers that practically every important industry is employing more workers now than ever before in their history, and I am wondering where all these so called unemployed come from and where they were during past periods of prosperity. I imagine it serves the purpose of the New Deal better to claim huge numbers of unemployed without making any specific analysis as to the reasons therefor, in that they can better put through certain types of legislation with this great army of folks held up as a result of changing conditions, and thus the necessity for changing laws which govern these conditions.

"It has always been my thought that when the usual bread winner of a family, who might customarily be the only one to work, regularly registers for employment, that possibly his wife and all the children above a certain age register also and thus swell the numbers who do not ordinarily seek employment, even if employment were offered. I am also of the opinion that changing agricultural conditions whereby the mechanical operations on a farm have displaced to a large extent hand labor have probably been more productive of unemployment than any other one feature. Apparently the present day politicians blame the whole thing on industry despite the fact that industry never has or never could absorb any great number of the total persons now listed as being unemployed.

"The administration sometime ago side-tracked a measure to give this unemployment problem careful study, but it would seem to me to be high time that something be done along this line, so that the Congress and the people alike would have some reliable information upon which to base their thought and action. I know that an attempt to bring this up would be like a voice crying in the wilderness, but I express these thoughts to you for what you may deem they are worth."

New Sound and Color Film of the South

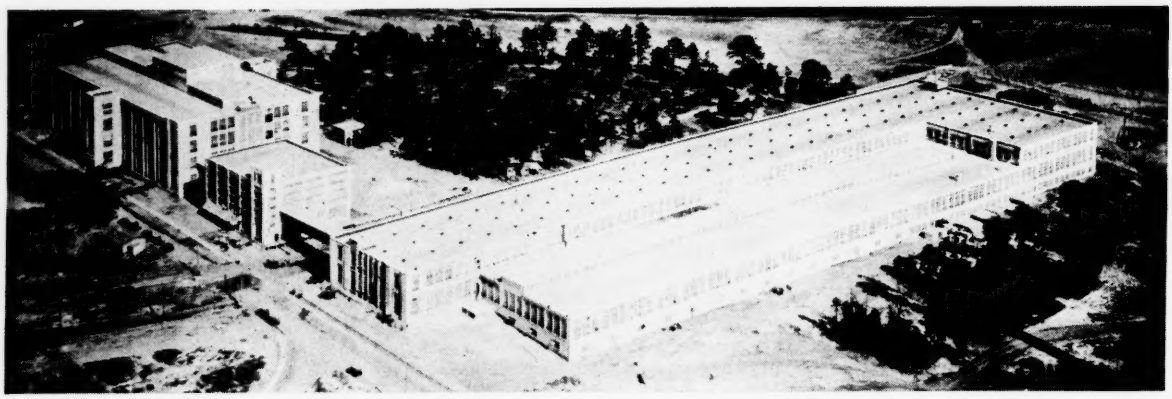
A 45-minute sound and color motion picture entitled "The New South," portraying the agricultural and industrial development of the Southern states and emphasizing the part the fertilizer industry has played in that development, will be shown during the coming months in all parts of the South. The showings will be sponsored by the distributors of Arcadian Nitrate.

This picture represents months of work by a production crew which toured the Southern states in search of authentic color. All scenes in the picture were filmed on the actual locations depicted; there were no paid actors; and all action was natural, nothing was staged.

The picture coincides with the tenth anniversary of the first shipment of American-produced soda from the Arcadian nitrate plant at Hopewell, Virginia.

After showing pictorially how the South has grown agriculturally and commercially since the coming of the first

(*Continued on page* 60)



Air Conditioning In The South

BY

Margaret Ingels, M.E.

Syracuse, New York

THE widespread use of air conditioning in the South shows the progressiveness of the southerner by providing for a greater enjoyment of comfortable living.

The textile mill served as the proving ground for much of the development of air conditioning. The term "Air Conditioning" was taken from the textile industry which used the expression "Yarn Conditioning" to signify the moisture condition of the fibre. It was in the textile mill that air conditioning spent most of its early years. Upon reaching adolescense it branched to many industries. And now that it has reached maturity, it is especially fitting that the South is so well represented by diversified industries which are using conditioned air in mills and factories.

Many installations in cotton mills, made as early as 1906, were located in the southern states. The moving of the textile industrial centers from New England to locations close to the cotton fields was influenced by controlled indoor weather. King Cotton, with manufactured weather, has helped change the agricultural South to an industrial South.

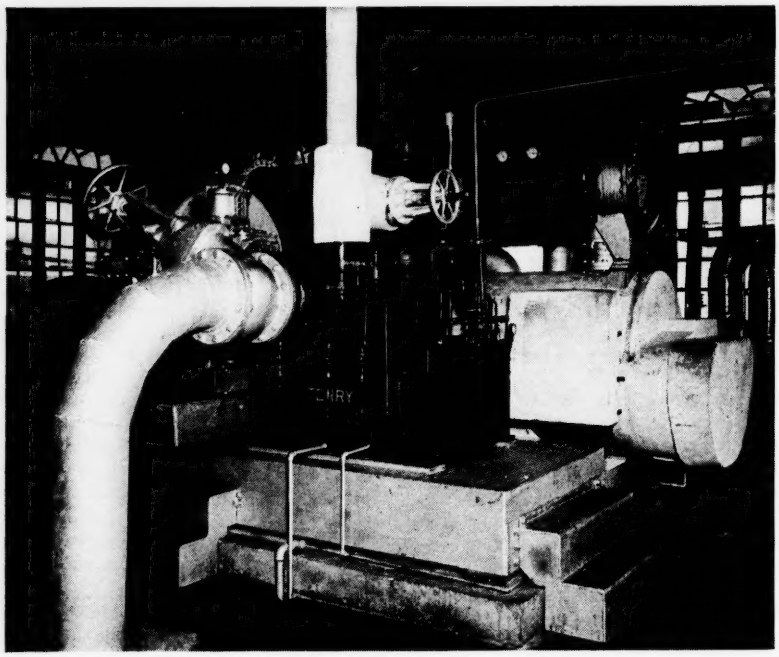
Perhaps no single development in recent years will mean more to the Southern states than the development of a process which makes possible the use of Southern pine in the manufacture of paper. It is interesting to note that the personal friendship of Dr. Charles H. Herty, whose name is inseparably connected with the utilization of southern pine for paper, and Dr. Willis H. Carrier, led to air conditioning of the laboratory where Dr. Herty did his first research.

Rayon cannot be made without controlled indoor weather. As early as August, 1916, air conditioning was bought by Viscose Company at Roanoke, Virginia. At the present more than half the plants of the country where rayon is manufactured are operating below the Mason and Dixon line. These mills are located in Maryland, North Carolina, Tennessee, Virginia and West Virginia. In addition, rayon processing plants in the South have an annual output exceeding 40 per cent of all such plants in the United States.

Printers in Baltimore, St. Louis, Dallas, Rogersville, Tennessee, Louisville, and Newport, Kentucky are among the many who realize the importance and value of controlled conditions of air to assure perfect "registry," uniform paper size. Health hazards of pressroom are removed by having an adequate supply of conditioned air supplied at all times. Static, which makes the handling of paper very difficult, does not exist in plants where relative humidities are controlled and maintained at sufficiently high levels.

In the Baltimore laboratories of Hynson, Westcott and Dunning where am-

(*Continued on page* 56)



Above—The Pacific Mills of Lyman, S. C., is one of the South's many industrial plants completely air conditioned.

Right—Centrifugal refrigerating unit used to chill 1200 gallons of water per minute which dehumidifies the blast at the Woodward Iron Co., Birmingham, Ala.

7700 Jobs are Created

. . . because we now can increase construction

THIS is the kind of news we like to be able to announce:

In the Commonwealth & Southern system we are now spending, additionally, over $20,000,000 for new plants and equipment. The spending of this sum will result in giving jobs, at good wages, to about 7,700 people.

This summer, our current budget, for new construction and equipment, called for an outlay of $33,000,000. By now adding over $20,000,000 for new facilities, we are increasing the generating capacity of our electric properties in Alabama, Georgia, Illinois, Michigan and Ohio by a total of 210,000 kilowatts.

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Because investors believed that the industry was being weakened by government subsidized competition, utilities were prevented from marketing new junior securities in recent years. They were prevented, thereby, from building new plants and expanding their facilities. As a result, thousands of people remained out of work in industrial plants, on railroads, in mines and in construction.

For six years The Commonwealth & Southern Corporation, in particular, was affected by the Government's power policy in the Tennessee Valley. During that time, we were prevented from financing any broad plant expansion of our Southern properties.

Recent indications, we hope, hold the promise that a generally more constructive attitude is beginning to be taken by Congress and other legislative bodies towards business and the utilities. Two encouraging signs are: the partial limitation by Congress of the operations of the Tennessee Valley Authority, and its reluctance to give away more public money to encourage the building of duplicating power systems and subsidized operations by publicly owned utilities.

In the hope that this constructive attitude by Congress will continue and be adopted by government administrators, we have gone ahead with our new program. We hope to be able to continue and enlarge upon it from year to year.

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To take care of known markets and future peace time needs for electric power, it has been estimated that this country's private utilities can easily spend, annually for some years to come, a billion dollars more than they spent in 1938 for plants and equipment.

The spending of an additional billion dollars yearly by the public utility industry for such purpose would give steady employment, at an average annual wage of $1,820, to about 385,000 men whose families are now probably on relief. At present, the average annual cost of keeping one household on relief is about $550. Moving 385,000 heads of families off government payrolls to private industry payrolls would reduce the need for government spending by $211,750,000 a year.

In many other of the country's industries there are situations comparable to this. After a decade of depression, they also need new equipment and new plants. There are now about 166,800 industrial plants of all kinds in the United States.

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Before the current war in Europe started, the American public and government obviously were fast becoming convinced that our unemployment problem will not be solved until private enterprise is operating at full capacity.

Moreover, it was becoming increasingly evident that until our private industry—the backbone of our democracy—does work at full peace time capacity, our individual liberties and our free form of government are endangered.

Clearly, no greater error can be made, now, than to let anything divert our attention from creating gainful employment for the greatest possible number of our people. By doing that . . . by making democracy function here . . . we can best aid ourselves and aid the world as well.

Certainly now is the time to see that American business is given every reasonable encouragement. Only the utmost of cooperation may carry us through these troublesome times.

Wendell L. Willkie, PRESIDENT

The Commonwealth & Southern System serves 1,258,000 electric customers in

Northern Territory	*Southern Territory*
Michigan	Alabama
Illinois	Georgia
Indiana	Florida
Ohio	Mississippi
Pennsylvania	South Carolina

Commonwealth & Southern System's

average RATE, to residential users of electricity, is 24% BELOW the national average

average USE, by these residential customers, is 33% ABOVE the national average.

The Commonwealth & Southern Corporation

Southern Construction

(*Continued from page* 29)

Virginia ..	146,000	23,931,000	11,995,000
W. Virginia	135,000	525,000	8,533,000
Total	$9,697,000	$53,582,000	$151,266,000

Public Building

(City, County, Federal; Housing; Schools)

	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1939
Alabama ..	$108,000	$1,384,000	$15,088,000
Arkansas ..	102,000	113,000	3,707,000
Dist. of Col.	1,978,000	249,000	38,632,000
Florida ...	689,000	2,411,000	12,396,000
Georgia ...	3,280,000	2,590,000	20,664,000
Kentucky .	454,000	1,022,000	6,400,000
Louisiana .	892,000	530,000	29,935,000
Maryland .	736,000	1,512,000	8,332,000
Mississippi	235,000	850,000	3,463,000
Missouri ..	97,000	500,000	5,655,000
N. Carolina	913,000	859,000	16,796,000
Oklahoma .	89,000	215,000	2,901,000
S. Carolina	240,000	1,706,000	6,667,000
Tennessee .	1,308,000	1,572,000	13,388,000
Texas	1,005,000	3,912,000	25,230,000
Virginia ..	799,000	4,060,000	16,890,000
W. Virginia	.....	1,000	10,009,000
Total	$12,925,000	$23,486,000	$236,153,000

Private Building

(Assembly, Commercial, Residential, Office)

	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1939
Alabama ..	$ 75,000	$1,180,000	$3,390,000
Arkansas .	395,000	125,000	1,334,000
Dist. of Col.	815,000	190,000	24,126,000
Florida ...	1,931,000	2,120,000	31,274,000
Georgia ...	740,000	450,000	9,546,000
Kentucky .	794,000	60,000	1,144,000
Louisiana .	90,000	65,000	5,614,000
Maryland .	1,492,000	1,193,000	12,884,000
Mississippi	598,000	57,000	1,956,000
Missouri ..	1,814,000	450,000	10,848,000
N. Carolina	35,000	860,000	4,915,000
Oklahoma .	125,000	250,000	1,520,000
S. Carolina.	208,000	100,000	3,613,000
Tennessee .	390,000	279,000	4,672,000
Texas	2,371,000	1,390,000	25,096,000
Virginia ..	222,000	585,000	4,801,000
W. Virginia	.....	80,000	1,152,000
Total ...	$12,095,000	$9,434,000	$147,885,000

Public Engineering

(Dams, Drainage, Earthwork, Airports; Rural, County, Municipal Electric; Sewers, Waterworks)

	Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1939
Alabama ..	$ 253,000	$ 378,000	$3,236,000
Arkansas .	119,000	325,000	7,710,000
Dist. of Col.	216,000	.....	9,956,000
Florida ...	1,146,000	349,000	6,911,000
Georgia ...	544,000	420,000	5,062,000
Kentucky .	140,000	35,000	6,611,000
Louisiana .	1,080,000	854,000	11,590,000
Maryland .	855,000	273,000	4,626,000
Mississippi	351,000	511,000	6,036,000
Missouri ..	425,000	1,107,000	7,075,000
N. Carolina	359,000	345,000	11,195,000
Oklahoma .	587,000	4,597,000	5,654,000
S. Carolina.	48,000	19,314,000	35,458,000
Tennessee .	1,242,000	898,000	10,253,000
Texas	1,858,000	3,461,000	31,553,000
Virginia ..	735,000	245,000	4,115,000
W. Virginia	.....	1,638,000	2,076,000
Total....	$9,958,000	$34,750,000	$169,117,000

New Industrial Plants and Expansions in the South During November, 1939

Ala. Birmingham	1940 construction budget	$6,165,000	Alabama Power Co.
Ala., Gadsden	Plant addition	.....	Goodyear Tire & Rubber Co.
Ala., Mobile	Fruit house	.....	Mobile & Ohio R. R.
Ark., Batesville	Distribution lines	.....	Arkansas Power & Light Co.
Ark., Little Rock	Laundry, dry cleaning plant	25,000	Majestic Laundry
Ark., Louisiana	Pipe line	.....	Nevada Transit Corp.
Ark., Shirley	Building and yards for planing mill	50,000	Pierce-Young Lumber Co.
Ark., Truman	Transmission, distribution system	40,000	Arkansas Power & Light Co.
D. C., Washington	Additional facilities	76,000	Chesapeake & Potomac Telephone Co.
D. C., Washington	Creamery	85,000	Lucerne Cream & Butter Co.
Florida	Pipe line	.....	Gulf Oil Corp.
Florida	Ice plant improvements	30,000	G. E. Tillman
Georgia	Pipe line	.....	Pure Oil Co.
Ga., Americus	Dial, repeater station	51,100	Southern Bell Telephone & Telegraph Co.
Ga., Atlanta	Building alterations	.....	Georgia Power Co.
Ga., Atlanta	Building alterations	30,000	Georgia Power Co.
Ga., Atlanta	Bus station	250,000	Southeastern Greyhound Lines, Inc.
Ga., Brunswick	Plant addition	500,000	Brunswick Pulp & Paper Co.
Ga., Columbus	Mill addition	40,000	Archer Hosiery Mill
Ga., Savannah	Repair shop	20,000	J. C. Lewis Motor Co.
Ga., Savannah	Shop improvements	40,000	Savannah & Atlanta Rwy.
Ga., Savannah	Evaporation house	90,000	Union Bag & Paper Corp.
Ga., Tenville	Box, crate factory	.....	Simmons Co.
Ky., Louisville	Factory addition and office	28,000	General Box Co.
La., Bastrop	Plant addition	50,000	Consolidated Chemical Industries
La., Baton Rouge	Tetraethyl plant	4,000,000	Ethyl Gasoline Corp.
La., Lafayette	Packing plant	.....	Evangeline Packing Co.
La., New Orleans	Office, laboratory, warehouse	.....	Howell Co.
La., New Orleans	Meat packing plant	.....	Longins & Collins
La., New Orleans	Packing plant	.....	Schott & Co.
La., New Orleans	Dock	.....	Standard Oil Co.
Md., Baltimore	Office, storage building	.....	Baltimore & Ohio Railroad
Md., Baltimore	New plant	.....	General Refractories Co.
Md., Baltimore	Storage building	.....	Locke Insulator Corp.
Md., Baltimore	Garage	.....	Shell Union Oil Co.
Md., Baltimore	Building	52,400	Westinghouse Electric & Mfg Co.
Md., Cumberland	Additional building	100,000	Celanese Corp.
Md., Cumberland	Plant expansion	100,000	Celanese Corporation of America
Md., Sparrows Point	Office building	.....	Bethlehem Steel Co.
Miss., Charleston	Service station, warehouse	100,000	Standard Oil Co.
Miss., Jackson	Bottling plant	28,000	Jackson Coca Cola Bottling Works
Miss., New Albany	Garment plant	25,000	City
Miss., Pascagoula	Factory	75,000	Jackson County Mills
Mo., Kirkwood	Central office building addition	.....	Southwestern Bell Telephone Company
Mo., North Kansas City	Corrugated steel warehouse	.....	Williams Roofing Products Co.
Mo., St. Louis	Addition	100,000	Coca Cola Co.
Mo., St. Louis	Plant addition	100,000	Kroger Grocery & Packing Co.
Mo., St. Louis	Super-service station	.....	Sears Roebuck & Co.
Mo., St. Louis	Dressing room building	.....	Swift & Co.
N. C., Burlington	Warehouse and garage	30,000	Burlington Mills
N. C., Charlotte	Garage, service office	60,000	Horton Motor Lines, Inc.
N. C., Glen Raven	Weave shed	20,000	Glen Raven Cotton Mills
N. C., Statesville	Milk condensery	200,000	Carnation Co.
South Carolina	Expansion	375,000	Springs Cotton Mills
S. C., Charleston	New studios	.....	Atlantic Coast Broadcasting Co.
Tenn., Chattanooga	Packing plant	.....	Dave Pavlow
Tenn., Madison	Tire plant	.....	Henry Lux & Joe Marksley
Tenn., Memphis	Exchange	500,000	Southern Bell Telephone & Telegraph Co.
Tenn., Nashville	Stove assembly plant building	75,000	Gray & Dudley Co.
Texas	Distillate recovery plant	190,000	Lone Star Gasoline Co.
Tex., Austin	Publishing plant	.....	Tribune Publishing Co.
Tex., Barreda	Packing plant	.....	Missouri-Pacific Railroad Co.
Tex., Corpus Christi	Nueces Bay power station	.....	Central Power & Light Co.
Tex., Corpus Christi	Gasoline pipe line	.....	Magnolia Petroleum Co.
Tex., Corpus Christi	Oil terminal	100,000	Magnolia Petroleum Co.
Tex., Galveston	Remodeling, erecting addition	25,000	Graughnards Bakery
Tex., Houston	Remodeling program	250,000	Pollock Paper & Box Co.
Tex., Houston	Central office building	.....	Southwestern Bell & Telephone Co.
Tex., Houston	Exchange	553,000	Southwestern Bell Telephone Co.
Tex., Manchester	Improvements	125,000	Lone Star Cement Corp.
Tex., Mercedes	Vegetable freezing plant expansion	.....	Central Power & Light Co.
Tex., Rusk	Cheese plant	.....	Kraft-Phenix Corp.
Tex., San Antonio	Transmitter and broadcasting equipment	50,000	Alamo Broadcasting Co.
Tex., San Antonio	Trailer building	.....	Hobbs Manufacturing Co.
Virginia	Passenger steamboat	1,000,000	Virginia Ferry Corp.
West Virginia	Coal washing plant	160,000	Koppers Coal Co.
W. Va., Charleston	Ice plant	31,000	Independent Ice Co.
W. Va., Morganton		.....	West Virginia Newspaper Publishing Co.
W. Va., Mt. Carbon	Loading dock	400,000	Mt. Carbon Co.
W. Va., Windsor	Generating plant addition	.....	West Penn Power Co.

Your telephone will take you home at holiday time

SPEND the holidays back home or with far-away friends, if you can. That's best of all. *But next best is a telephone chat.*

Miles fade away. You can hear their happy, eager voices and enjoy personal bits of family news as if you were face-to-face. And you'll come back to your own fireside with the warm satisfaction that grows from pleasure *gained* and *given!*

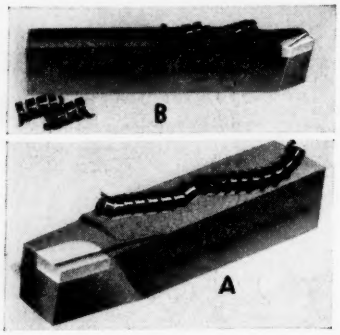
Remember that rates are lowest after seven every evening and all day Sunday. For rates, look in your local telephone directory or ask the Long Distance operator.

BELL SYSTEM

NEW WAYS OF DOING THINGS

Chip Breaker Tools

Designed to overcome the problem of convenient chip disposal in cutting steel at the highest speeds practical with Kennametal tools, the McKenna Metals Company, Latrobe, Pa., announces two new forms of standard Kennametal single point turning, facing, and boring tools for machining steel either annealed, as forged, as cast, or in the heat-treated form up to 550 Brinell. Figure A shows the parallel ship breaker form, known as a chip curler, on a standard style No. 11

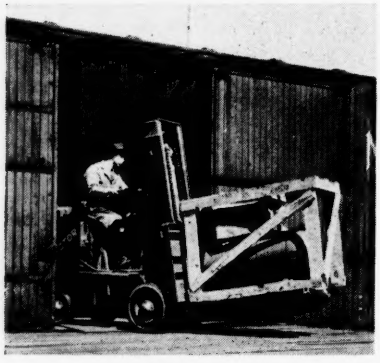


Kennametal Chip Breaker Tools

right hand turning tool. Figure B shows the chip breaker ground at an angle, usually 20 degrees to 40 degrees from the side cutting edge, which breaks the chips by deflecting them against the unturned shoulder of the work, where they are snapped off into crescent shaped chips easily shoveled up. This is designated a chip breaker form. Both tools are particularly useful in shaft turning work, steel roll and projectile turning jobs, and in general where large volumes of chips are produced per minute.

New Towmotor Carloader

For quicker maneuvering in railway freight cars, a shorter straight gas powered hydraulic lift truck with a 47-inch wheel base has been announced by The Towmotor Company of Cleveland, Ohio. The machine is center control type with 2-wheel drive at load carrying end, and has a 2-wheel steer at the rear for making short pivot turns on either driving wheel. Speed of travel is controllable from ½ to 8 miles per hour, forward or reverse, with two speeds forward and two reverse. Maximum and minimum speeds of lift are 40 and 60 feet per minute. The truck is designed with 150 square inches of braking service. It is of welded frame, box type and formed from extra heavy steel plate, with the motor mounted on rubber. Motor and transmission assembly is flexible and connected to drive axle by propeller shaft with two universal joints. The oil pump for the hydraulic lift is connected to the motor by constant drive to avoid clutching. Lifting capacity is up to 4000 pounds per load.



Gas Powered Hydraulic Lift Truck

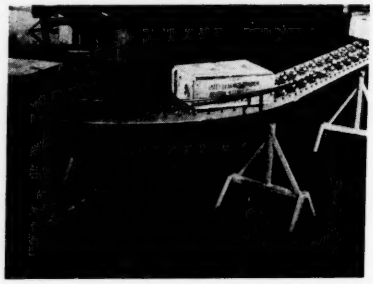
Raleigh Installs 750,000-Gallon Elevated Tank

For the expansion and improvement of its water facilities, the City of Raleigh, North Carolina, is building a new filtering and pumping plant, electrically operated, for a capacity of 8,000,000 gallons, and expected to be completed by July 1, 1940. In connection with the betterments, a new 16-inch pipe line has been installed and a 750,000 gallon capacity radial cone bottom elevated tank and tower erected. On the present system

there is a 600,000-gallon elevated tank and tower which the city plans to condition and keep in service. The new 750,000-gallon elevated tank, of Colonial design, is equipped with outside trusses. The structure is 36 feet, 3 inches to the bottom and has a range in head between the upper and lower water levels of 25 feet. It was built by the Chicago Bridge and Iron Company of Chicago, Illinois, and was fabricated at the company's Birmingham plant.

Wheel and Roller Conveyors

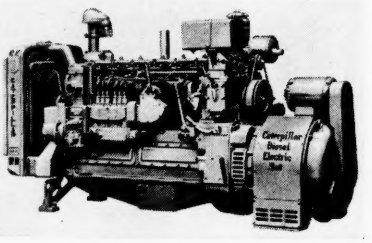
Backed by engineering and manufacturing skill, the new Metzgar wheel and roller conveyors, designed for efficient and inexpensive service in breweries, canneries, carton manufacturing plants, factories and warehouses of various types, and for other purposes, offer many noteworthy advantages. Metzgar wheel conveyors are light in weight, but due to engineered construction, will carry up to 700 pounds, and are ideal for speedy handling of boxes, cartons, cases, etc. They are easily set up or knocked down. Gravity necessary to control the speed of travel is taken care of by a quick, positive thumb screw. The heavier the case to be conveyed, the less elevation necessary. Three feet of elevation will convey a 50-pound box 100 feet or more without any push. Important features of the conveyors are welded construction, simple couplings protected against bending, dust-proof wheel bearings with hardened ball races, making lubrication unnecessary; channels and other members without rough edges, special machine bolts, light stands, etc. Metzgar wheel conveyors are manufactured by the Metzgar Company, Grand Rapids, Mich.



Metzgar Wheel and Roller Conveyor

Low Cost Diesel Electric Set

To meet a demand for a low cost, economical power plant of 30 KW capacity, Caterpillar Tractor Co., Peoria, Ill., announces an addition to its line of Diesel electric sets in the Model 46-30 which includes a six-cylinder Diesel engine and, as in the 15 and 20 kilowatt sizes, has all electrical equipment inbuilt, with the exception of a circuit breaker. It may be installed within an hour. Uses for the new set are widely varied. It is particularly well suited for hotels and theaters, and may be used to power air conditioning machinery in these and similar establishments; serve as a standby unit for airports, etc., and, like the smaller sets, will fit into camps, carnivals, factories, ice plants, mines, quarries, etc. The engine has three operating adjustments, none of which involves the Diesel fuel system. The generator is of single unit construction, equipped with ball bearings, while built-in regulation enables the set to pick up larger motor loads with little light flicker and voltage drop. No rheostats, switchboards, instruments or complications of any kind are needed with the set, and as units of this capacity are almost operated close to the power destination, even a voltage regulator is unnecessary.



New 6-cylinder Diesel Engine

THERE'S A PERMANENT WAVE AHEAD

Connecticut (bless their New England thrift) has had permanent license plates for four years now, and they're still going strong, which means, looking well.

They're aluminum, of course, with a patented finish that lasts for years.

Saves the state no end of expense. Instead of a complete new set of heavy plates, they send you small replaceable date slugs each year. Saves metal, manufacturing cost, postage, shipping, storage . . . tidy savings indeed.

Saves car owners a lot of bother, not to mention the severe mental strain of having to learn new numbers each year.

SO . . . first we hope that a lot of business men who read this good news will give *their* state departments a little push on this praiseworthy idea.

Then we would hope that you would be reminded to review your own products, to see if Alcoa Aluminum with a similar finish wouldn't be an improvement over the present incumbent.

Connecticut is seaboard, and that's a tough test, what with salt air, corrosion, and all. Tough enough, indeed, to make us quite ambitious to help you share this success on your own product. May we? Aluminum Company of America, 2109 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA

ALCOA · ALUMINUM

The South's Foreign Trade With South America

(*Continued from page 26*)

MIAMI, FLA.

IMPORTS TO MIAMI, FLA. (TONS)

Miscell.	Tile	Bananas	Provisions	Total	To and from
216	1,035	4,117	1,521	6,889	Cuba
2,766	...	...	2	2,768	New Providence
2,982	1,035	4,117	1,523	9,657	TOTALS

EXPORTS FROM MIAMI, FLA. (TONS)

Total	Iron & Steel Mfrs.	Lumber	Paper & Mfrs.	Fertilizer	Miscell.
2,190	89	...	331	160	*1,610
8,392	282	3,865	42	609	†3,594
10,582	371	3,865	373	769	5,204

*Includes 435 tons of oil-cake and meal. †Includes 362 tons of non-metallic minerals.

TAMPA, FLA.

IMPORTS TO TAMPA, FLA. (TONS)

Misc.	Fertilizer	Vegetable Products	Sugar	Bananas	Provisions	Total	To and from
4	...	1	...	1,912	26	1,943	Br. Honduras
...	...	...	...	...	...	...	Canal Zone
11	...	...	...	43	...	54	Guatemala
...	...	...	...	585	30	615	Honduras
...	...	86	...	...	...	86	Nicaragua
10	...	1,935	...	3,457	...	5,402	Mexico
...	...	...	...	...	...	...	Antigua
...	...	...	...	...	...	...	Barbadoes
113	...	2,092	13,706	4,817	3,602	23,790	Cuba
...	...	...	...	...	...	...	Dominica
...	...	...	...	...	...	...	Dominican Republic
7	...	...	...	...	...	7	Grand Cayman
...	...	...	...	...	...	...	Grenada
...	...	...	...	...	...	...	Guadeloupe
...	...	...	...	735	...	735	Haiti
...	...	...	...	...	...	...	Jamaica
...	...	...	...	...	...	...	Martinique
...	...	...	...	...	...	...	St. Croix
...	...	...	...	...	...	...	St. Kitts
...	...	...	...	...	...	...	St. Lucia
...	...	...	...	...	...	...	St. Martin
...	...	...	...	...	...	...	St. Thomas
...	...	...	...	...	...	...	St. Vincent
...	...	...	...	...	...	...	Trinidad
...	2,301	3,296	...	...	5,577	11,174	Argentina
...	45	...	...	...	34	79	Uruguay
...	...	...	...	...	...	...	Colombia
15	...	...	...	...	...	15	Br. Guiana
...	...	1,984	...	...	...	1,984	Surinam
...	775	...	...	...	...	775	Venezuela
...	6,962	...	...	...	...	6,962	Chile
160	10,083	9,394	13,706	11,549	8,729	53,621	TOTALS

EXPORTS FROM TAMPA, FLA. (TONS)

Total	Lumber	Cement	Iron & Steel Scrap	Phosphate	Misc.
559	126	277	...	...	156
6,251	129	5,641	...	...	481
...	...	...	...	...	...
...	...	...	...	...	...
...	...	...	...	...	...
125	20	51	...	...	54
901	901	...	...	...	...
4,580	4,078	...	...	...	502
5,812	4,482	...	...	1,010	320
106	106	...	...	...	...
315	...	...	315	...	...
449	54	...	...	...	395
1,073	1,073	...	...	...	...
4,063	4,063	...	...	...	...
...	...	...	...	...	...
8,405	8,274	...	...	32	99
7,100	7,100	...	...	...	...
413	413	...	...	...	...
999	989	...	...	...	10
117	117	...	...	...	...
164	164	...	...	...	...
422	422	...	...	...	...
1,393	1,393	...	...	...	...
12,936	12,926	...	...	...	10
2,409	2,409	...	...	...	...
...	...	...	...	...	...
595	...	595	...	...	...
971	771	...	...	...	200
...	...	...	...	...	...
...	...	...	...	...	...
...	...	...	...	...	...
60,158	50,010	6,564	315	1,042	2,227

PENSACOLA, FLA.

IMPORTS TO PENSACOLA, FLA. (TONS)

Miscell.	Fertilizer	Cabinet Wood	Total	To and from
27	...	13,831	13,858	British Honduras
18	...	...	18	Guatemala
63	...	169	232	Honduras
...	...	4,204	4,204	Mexico
...	...	...	...	Cuba
50	...	...	50	Jamaica
24	...	...	24	Argentina
...	...	...	...	Brazil
...	...	...	...	Uruguay
...	79,006	...	79,006	Chile
182	79,006	18,204	97,392	TOTALS

EXPORTS FROM PENSACOLA, FLA. (TONS)

Total	Naval Stores	Lumber	Miscell.
...	...	...	...
...	...	...	...
20	...	20	...
...	...	...	...
4,235	905	3,330	...
3,606	...	3,579	27
16,139	3,434	12,627	78
4,535	3,243	1,248	44
1,385	275	1,108	2
...	...	...	...
59,920	7,857	51,912	151

GALVESTON, TEX.

IMPORTS TO GALVESTON, TEXAS (TONS)

Misc.	Sugar	Bananas	Corn	Provisions	Total	To and from
..	...	909	...	...	909	Br. Honduras
14	...	...	...	145	159	Canal Zone
..	...	1,768	...	...	1,768	Guatemala
..	...	51,317	...	287	51,604	Honduras
2	...	22,034	...	25	22,061	Mexico
14	80,174	...	...	6	80,194	Cuba
..	...	...	...	1	1	Dominican R.
..	...	...	...	...	...	Guadeloupe
..	...	...	...	...	...	Haiti
..	...	...	21,163	94	21,257	Argentina
..	...	...	...	...	...	Brazil
..	...	...	...	204	204	Uruguay
..	...	...	...	82	82	Colombia
30	80,174	76,028	21,163	844	178,239	TOTALS

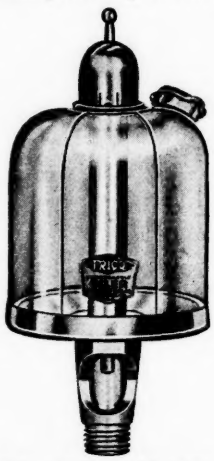
EXPORTS FROM GALVESTON, TEXAS (TONS)

Total	Provisions	Grain	Non-metallic Minerals	Sulphur	Misc.
...	...	...	...	...	...
2,234	...	1,190	563	40	441
...	...	...	...	...	...
2	...	...	...	...	2
112	...	...	...	...	112
5,284	439	4,619	...	35	191
197	90	...	60	...	47
43	43	...	...	...	...
364	362	...	...	...	2
1,000	...	...	...	1,000	...
500	...	...	...	500	...
...	...	...	...	...	...
1,260	...	...	90	56	1,114
109,960	934	5,809	713	1,631	1,909

(*Continued on page 48*)

Unbreakable Gravity Feed Oiler

The Trico Fuse Manufacturing Company of Milwaukee, Wis., announces a new line of visible gravity feed oilers, modernized and streamlined, with unbreakable reservoirs. The oiler is mounted at the top of the part to be lubricated and any pre-determined number of drops of oil per minute can be obtained by a simple adjustment of the ratchet control. When adjusted, no further attention is required except to keep a reserve supply

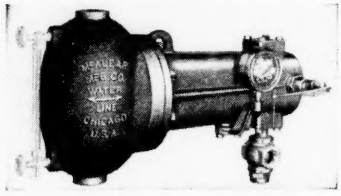


Trico Unbreakable Oiler

of oil in the bottle. A shut-off lever at the top, when in a vertical position as shown, feeds oil, and when tilted to the side stops the flow. Light in weight, there are no gaskets to leak as the unbreakable bottle is cemented and roll-clinched to the heavy brass base. All metal parts are bright cadmium-plated for beauty and easy cleaning. The oiler is made in three sizes—one, two, four and eight-ounce capacities.

Improved Feed Water Regulators

A series of improved feed water regulators for steam boilers has been announced by The McAlear Manufacturing Company of Chicago, Ill. Known as Nos. 906, 907, 936 and 966, these regulators are designed not only to maintain a constant, safe water level automatically in any steam boiler, whether operated singly or in batteries, but also to prevent damage



Regulator For Steam Boilers

by stopping burners or stokers when, in case of failure of the water supply or pumps, the boiler water level reaches a dangerous point. Regulators in the series are constructed of semi-steel with stainless steel float and trim for pressure up to 250 pounds, and of cast steel with stainless steel float and trim for pressures of over 250 pounds.

Cotton Bale Jack

For making bale sampling a faster, safer and more economical job, Templeton, Kenly & Co., Chicago, Ill., has introduced the Simplex No. 6275 Cotton Bale Jack, which is mounted on rubber-tired wheels and may easily be transported from place to place. In operation, the jack is placed directly in front of the bale to be sampled and adjustable fork is raised or lowered so that it will engage the bale to be sampled when the jack is operated. Operating the jacking mechanism causes the fork to lift the bale so that it can be sampled from the bottom. To sample a bale from the top, the bale above is lifted. The Simplex Cotton Bale Jack will readily lift bales up to five or six tiers high and has a full rated capacity of 5 tons. The unit is jacked from the side parallel to the rows so that the jack handle will not be fouled by the opposite bales. A double socket is provided for jacking in close quarters, as against a wall or post. Two sizes of the jack are available—85 inches and 97 inches in height. A 4-foot carbon steel lever bar is furnished with each unit.

Space Saving Snubbers

Augmenting the present line of Burgess Bumpers, a new series known as the Burgess SDHC series Snubbers, has been announced by the Acoustic Division of Burgess Battery Company, Chicago, Ill. This series covers a range of standard pipe sizes from 1 to 32 inches. Both size

Burgess SDHC Snubber

and weight have been reduced by a unique rearrangement of the controlling parts, while another change lies in the substitution of concentric connections for eccentric connections to facilitate installation. Sizes 1 to 4 inches are provided with nipple connections, and sizes 5 inches and larger with flange connections.

Speed Clip for Metal Parts

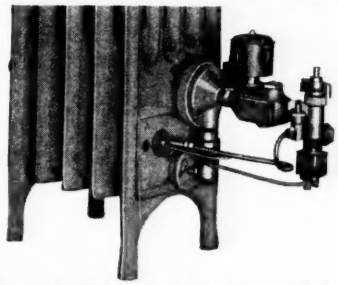
A new fastening device known as a Speed Clip has recently been developed by the Tinnerman Speed Nut Company of Cleveland, Ohio, for fastening metal parts together without the need of gaining access to the opposite side of the assembly, as required with nuts, bolts or threaded studs. The device is a tubular-like formation of spring steel, and while being quite cylindrical in shape, it is not a complete cylinder. With slight variations in design, the Speed Clip may be used as a permanent lock, removable lock, or as a slideable grip type. The assembly device is unique in that it eliminates the use of wrenches, pliers or screw drivers, the entire assembly work being reduced to the simple and rapid insertion of the clips into holes and the studs into the clips.

New Bushing for Grinding Wheels

The V. D. B. (Vibrator Dampener Bushing) resilient mounting for portable grinders is a new feature in grinding wheels manufactured by The Manhattan Rubber Manufacturing Division, Passaic, N. J. Application has been made for a patent for the development which offers several advantages, it is claimed, over regular lead-bushed wheels. According to tests made by the manufacturer, the use of the V. D. B. mounting, which requires no changes in existing equipment, increases grinding wheel life. Other advantages claimed for the bushing are: reduction of maintenance costs; better grinding finish obtained; increased operator efficiency, minimum of vibration, and less fatigue.

Automatic Gas-Steam Radiators

Using either natural or artificial gas, a new automatic control and safety pilot is announced by the Automatic Gas Steam Radiator Company, Pittsburgh, Pa., as available for its line of gas-steam radiators, with or without room thermostat. These radiators are of cast iron construction, practically indestructible, and are ideal for offices, hotels, churches, stores, small shops, and other locations

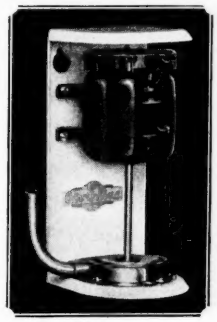


Automatic Radiator Control and Safety Pilot

where the operation of big boilers is not practical. Available in both vented and unvented types, they operate automatically without boiler, water pipes, coal, ashes or janitor service. The new device uses a constant burning pilot and a positive safety pilot. Its design is such that it is impossible to get a flow of gas to the burner in the absence of a pilot flame. Operation is simple, as it is only necessary to manually actuate the valve with the reset button and ignite the pilot flame. Within a few seconds the valve will remain open. In the event of the failure of the pilot flame, it will snap closed.

Acid Resisting Pump

Made of stainless steel and mounted on a vitreous, porcelain enameled stand, a new pump has been developed by The Air-

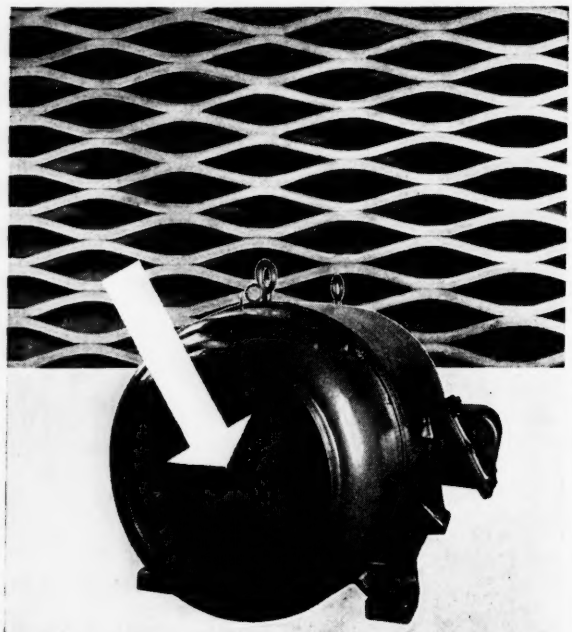


Small Acid Resisting Pump

O-Line Company of Dallas, Texas, which is claimed to be one of the most efficient small pumps ever developed in the low price field. It is made in three sizes—from 140 to 360 gallons per hour.

NOW IT'S *Stainless*

EXPANDED METAL



Ordinary metal guards for this motor soon rusted and failed. Now, fabricated of Armco Stainless Steel, these guards will remain as good as new for the life of the motor.

Chalk up another new money-saving application for versatile stainless steel! Here's expanded metal made of Armco Stainless — ready for requirements where abrasion and corrosion are rampant.

Applications for stainless expanded metal include motor guards, continuous dryers, metal baskets, broiler racks, refrigerator shelves, window guards, safety guards, storage bins, air filters and fresh vegetable display stands.

Remember, stainless mesh resists corrosive action and stands up under long, hard usage because it is durable and strong. It is easy to keep clean and attractive too.

Maybe you can profit by changing to this new kind of expanded metal for *your* products. Why not give it a trial and see? A word from you and we shall gladly put you in touch with experienced fabricators of stainless steel mesh. Write The American Rolling Mill Company, 2011 Curtis Street, Middletown, Ohio.

ARMCO *Armco*

STAINLESS STEELS

» » » *Finance* « « «

AND KINDRED SUBJECTS

Taxes Mounting

The result of a study undertaken by the National Industrial Conference Board shows that for the year 1913 the ratio of all tax collections to national income was 7 per cent. Federal tax collections were light and half the total came from customs duties. The Board says:

"In 1939 we are by contrast a heavily taxed nation. The ratio of Federal, state and local tax collections to national income for 1938 is estimated at 22.4 per cent. For Federal taxes alone the ratio was 9.5 per cent."

We are not only heavily taxed, but the tax system costs a tremendous amount of labor in the preparation of many forms to answer the requirements of city, state and Federal government. Any tax system which costs such losses in time should be simplified. A Federal sales tax, in spite of what the politicians say, would bring home to every voter (and there is the rub) what government is costing, and would do away with many of the annoyances from which business suffers in the preparation of returns.

Better Railroad Earnings

Net operating income of leading railroads show, by reports recently issued material gains for October over the same month a year ago. Some figures are nearly 45 per cent over the same month last year, and 66⅔ per cent over the same month in 1937.

Class I railroads of the entire United States for the month of September 1939, had a net income after fixed charges of $41,078,000 as compared with $6,395,000 in September, 1938.

Railroad employment also has increased. The Interstate Commerce Commission reports that a month ago Class I railroads had 1,055,164 employes, the largest number since November, 1937.

Carloadings continue at an accelerating pace, and altogether the situation is more encouraging for the carriers than it has been for a long time. One result of it is much needed equipment is being bought, and this in turn is increasing the activity of mill and supply houses.

Why Does Not the Share Market Advance?

Quotations on the share market are still considerably below those of 1937. There are not enough buyers to put them up, and on the exchanges of the country supply and demand still has a lot to do with the rise and fall of prices.

Uncertainty of what is ahead affects shares just as it affects prices of real estate and ventures in new business enterprises. When sales bring a profit, taxes, which are always present, take a large part of it.

Before there is a general advance out of the woods of depression, the course of government in its fiscal affairs, and in its law making power must be made clearer than it is now.

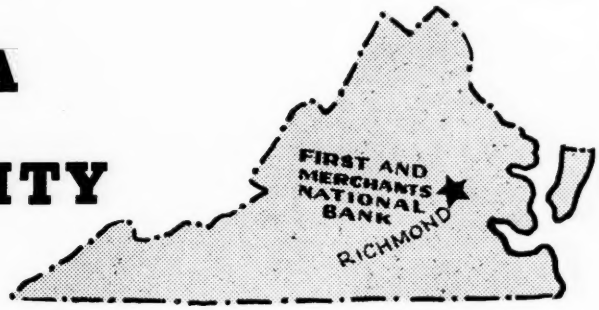
Business still needs encouragement. Restrictive laws make its future progress uncertain. Amendments in such laws are called for as being essential to free enterprise.

Power Output Gains

The output of electricity rose 13.6 per cent in the 12-months period ending with November. This is the average increase. The highest percentage gain was in New England with 19.6 per cent, with the Southern states next with 14 per cent, while the Rocky Mountain area was lowest at 6.4 per cent.

(*Continued on page* 42)

VIRGINIA AND OPPORTUNITY



Whether as a location for manufacturing activities, as a sales territory, or as an investment field, Virginia presents a real opportunity. Natural resources, transportation, climate, growing markets and fair tax policies offer the essentials of prosperity.

For many years First and Merchants, as Virginia's largest bank, has been the leader in supplying banking facilities for business activities in many parts of Virginia and the South. If you are considering a change in your location or the establishment of an additional plant, First and Merchants would deem it a privilege to consult with you and aid in obtaining for you reliable information that would be helpful to you in deciding upon your new location in this territory.

FIRST AND MERCHANTS
National Bank of Richmond

John M. Miller, Jr., Chairman of the Board — H. Hiter Harris, President

CAPITAL AND SURPLUS SIX MILLION DOLLARS

Member Federal Deposit Insurance Corporation

MOUNT AIRY GRANITE

For Better Buildings and Memorials

NORTH CAROLINA GRANITE CORP.
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DRAWING MATERIALS

Drawing Instruments, Slide Rules, Planimeters, Drawing and Tracing Papers, Drafting Room Furniture, Surveying Instruments, Tapes.

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STOP THE RAVAGES OF DRY ROT AND TERMITES

by pressure-treating your lumber and timber with ZMA or Creosote. Eppinger and Russell Co.'s preserving process increases the life of woods from 8 to 20 times. For more than half a century, the outstanding utilities and industrial plants have depended upon Eppinger and Russell Co. for long-life, low-maintenance lumber that is immune to decay, dry rot and termite attack.

PRESSURE-TREATING PLANTS AT:
Jacksonville, Fla.,
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WOOD PRESERVERS — SINCE 1878
EPPINGER AND RUSSELL CO.
84 Eighth Ave., New York City

RECEIVER'S AUCTION SALE
POWERS FOUNDRY PROPERTY
AT ELKTON, MARYLAND, WED., DEC. 27, 1939

LAND: 31,816 Sq. Ft., with Railroad Siding. Brick Construction Foundry Building, 17,000 Sq. Ft. Floor Space, with 2 Cupolas, Niles 5-Ton Electric Crane, Elevator & Core Oven. Spacious Pattern Shop. Office Building. Varied Assortment of steel and wood flasks. Miscellaneous Foundry Equipment. Skilled labor available.

For details consult

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BUSINESS IS IMPROVING

and plans for new development are being made.

Our purpose is to help business

Correspondence invited

BALTIMORE COMMERCIAL BANK
GWYNN CROWTHER, *President*
BALTIMORE, MARYLAND

Member Federal Reserve System
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AS A MOST SUITABLE

CHRISTMAS

GIFT

for your business friends, associates, customers—or any responsible, thinking citizen interested in the progress of our great Southland

WHY NOT GIVE THIS YEAR

THE

MANUFACTURERS RECORD

Special Rates have been established at only $1.50 per subscription for Gift Orders, and your own renewal may also be included at this rate.

Send us the names and mailing addresses of those to whom you want to send the RECORD and we will see that announcement cards and first issues are in their hands before Christmas.

MANUFACTURERS RECORD PUBLISHING CO.

COMMERCE & WATER STS.
BALTIMORE, MARYLAND

"Finance and Kindred Subjects"

(*Continued from page 40*)

Government Bonds Give a Good Account of Themselves

More than half the debt of the Federal government is held by banks and fiduciary institutions. The market in government bonds went off in September and the Treasury granted the privilege of borrowing at par on such securities to all banks, whether members of the Federal Reserve System or not. The rediscount rate for loans secured by government bonds was reduced to 1 per cent in Reserve districts, and in addition to this the Federal Reserve banks came into the market to the extent of $400,000,000 for the purchase of securities. This support extended for about three weeks, and from then on the market has proceeded without help.

A test came when Mr. Morgenthau made an exchange offer of $206,000,000 of Commodity Credit Corporation notes, and since then a note issue of over $500,000,000 of notes maturing in a little more than four years at 1 per cent interest were many times over-subscribed.

Reduction in State Debt

The state of Alabama reports that it has reduced its debt by $1,594,000 during the fiscal year ended September 30, 1939. The reduction during the past two fiscal years was $4,504,000.

Business in 1940

The Bureau of Agricultural Economics forecasts for 1940 a level of industrial activity somewhat above this year's average, but possibly not as high as the current quarter. The average level, however, in the opinion of the Bureau for all of next year will show an improvement over the average of 1939.

The uncertainties coming out of war and the fact that inventories were built up in September buying are contributory factors to a slight reduction of the level of activity that has been seen of late. It is the opinion that while war improved business to some extent, it is likely business would have picked up anyhow.

Some increases in capital expenditures are looked for and a less cautious buying policy on the part of business generally.

Christmas Clubs

Although the abundance of money has made for lowered interest rates, savings depositors' habits of thrift fortunately persist. The Christmas Club, claiming 7,000,000 members, announces that a distribution of $350,000,000 will be made by 4700 banking institutions during the week starting Monday, December 4. This is 7 per cent in excess of 1938, and the average distribution per member amounts to $48.80 as against a $47 average in 1938.

Commercial Loans Increase

As November closed, Federal Reserve member banks showed an increase in business loans. Banks in 101 leading cities reported an increase of $26,000,000 in commercial and agricultural loans, $32,000,000 in loans to brokers.

Banks as a whole are in a particularly favorable position for meeting the demands of commercial borrowers. Bills payable have become largely a thing of the past and the problem is to keep idle money working.

On the other side of the picture, railroads are reducing their debts to banks and the Reconstruction Finance Corporation. Large industries and public utilities have refunded and placed on a lower interest basis a considerable part of their capital obligations. Other obligations in the form of arrearages in dividends have been reduced through payments to shareholders by steel companies, packers, cotton mills and others.

N&W'S ANNUAL PAYROLL *and* PURCHASES

$50,000,000

...promotes prosperity in the communities the railroad serves

YOU WILL FIND these dollars in your pocket, whether you are a manufacturer, a merchant, a farmer, a butcher, or a baker. For N. & W. dollars are community dollars.

To its thousands of employees in six states, the Norfolk and Western pays approximately $32,000,000 annually in wages and salaries. These railroad workers spend their earnings in their home towns—your communities—for food, rent, clothing, automobiles, radios, and other necessities and luxuries of life. They deposit their savings in local banks; invest in local real estate; contribute to local charities; pay local taxes.

And the Norfolk and Western itself, is a big customer in the hundreds of communities along its lines. This railroad spends an average of $18,000,000 a year on a shopping list of 50,000 different items, from pencils to freight cars, from steak to steel rails, from lumber to stationery, from coal to crossties, from toothpicks to paint, from advertising to apples, and so on and so on.

Day in and day out, year after year, these millions of railroad dollars are pouring steadily into rural sections, towns and cities along the railroad—promoting prosperity, creating jobs in industry, business and agriculture. Indeed, N. & W. purchases and payrolls are no mere "shot in the arm" to briefly quicken the economic pulse, but a sound, vital investment in the welfare and progress of the territory the railroad traverses.

The Norfolk and Western Railway and the Norfolk and Western Family are proud to have such an important part in promoting prosperity in communities along their lines. The railroad and its employees are worthy of your support and consideration; their tremendous purchasing power is worthy of preservation.

NORFOLK *and* WESTERN RAILWAY

INDUSTRIAL NEWS

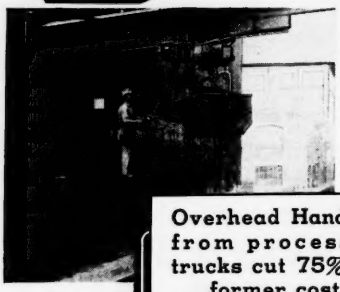
Archibald Fleming Rader

Announcement is made of the death at Haverford, Pennsylvania, on October 8, of Archibald Fleming Rader, president of Belmont Iron Works, Philadelphia. Occupying an outstanding position in the steel industry as head of an important fabricating unit, Mr. Rader was well known in the fabricating industry generally, as well as the hot mills. He was born in 1871 on a farm near Gauley, West Virginia, where he spent his early life, and was graduated from the University of West Virginia. Joining Belmont Iron Works in 1901, he soon visioned the potential possibilities for expansion, and in 1905 the company built the first part of its Eddystone Plant. He became president of the company in 1936.

Chemical Industries Exposition

Based upon the amount of exhibit space now under contract, this year's Chemical Industries Exposition to be held at Grand Central Palace, New York City, during the week of December 4-9, bids to be the largest since 1930. Three entire floors have been reserved for the Exposition and about 95 per cent of the exhibit space has been engaged. Nearly 300 exhibitors representing more than forty industries have engaged space. This will be the Seventeenth Exposition of Chemical Industries and will be held under the direction of Charles F. Roth, president of the International Exposition Company, Grand Central Palace.

Reduce Costs with Overhead Handling



Overhead Handling from process to trucks cut 75% off former cost.

Elimination of congestion increased production from 26 to 48 tons per day.

A 254 page book used as a technical reference for all data covering Mono-Rail equipment will be sent on letterhead request.

Time studies obtained after installation of overhead handling equipment often reveal definite reductions in costs together with more productive use of man-hours.

Mechanical methods provide not only low cost movement of goods but also release skilled labor for profitable production.

This is accomplished in American MonoRail systems by the elimination of floor congestion, by increasing unit loads, by faster and more accurate movement and finally, with the American MonoTractor, by complete automatic transportation.

Compact electrification together with the many exclusive control features of the American MonoTractor, permit the application of automatic equipment to handling problems in nearly every industry. Costs are reduced in direct proportion to the number of man-hours saved.

Engineering consultation with men of long experience in this highly specialized field often brings up hidden possibilities for cost saving or production increases. This service is available at no obligation.

AMERICAN MONORAIL CO.

13109 Athens Ave., Cleveland, O.

Sterling Pump Appointment

Sterling Pump Corporation, Hamilton, Ohio, announces the appointment of Henry J. McKenzie as Executive Vice-President. Well known throughout the country, Mr. McKenzie is recognized as an authority on pumps and pumping equipment of all types. He brings to his new position many years' experience in serving industry in connection with deep well turbine pump installations.

Allegheny-Ludlum Steel Representative

Allegheny-Ludlum Steel Corporation, Pittsburgh, Pa., has announced the appointment of J. M. Tull Metal and Supply Company, Inc., 285 Marietta Street, N. W., Atlanta, Georgia, as Tool Steel Representative in the state of Georgia. Adequate stocks of Allegheny-Ludlum Tool Steels will be available to the trade in the Tull warehouse.

Makes High Speed Cutting Tools

Announcing its entry into the manufacture of high speed metal cutting tools, the American Cutter and Engineering Company, 1453 Fifteenth Street, Detroit, Mich., states that it is equipped to manufacture all types of milling cutters, reamers, counterbores, forming tools, etc. The company will also supply a complete engineering service to assist the trade in cutter problems. Gerald H. Reader is president; Arlo J. Hillyard, vice president; Milton Price, secretary-treasurer, and Weldon C. Elliott, in charge of production.

Foil Mills For Louisville Plant

Contract for a number of foil mills and auxiliary equipment to be used in the progressive rolling of strip aluminum to foil, has been awarded by Cochran Foil Company of Louisville, Ky., to the Lewis Foundry and Machine Division of Blaw-Knox Company, Pittsburgh, Pa. These cold rolling two-high mills will form the nucleus of a new foil plant with facilities to produce, in its initial stages, several millions of pounds of aluminum foil annually. Featuring new developments in precision and automatic controls, the mills will roll with a gauge variation of less than 1/40,000 of an inch at speeds up to 600 feet per minute. Aluminum strip in widths up to 27½ inches wide and from .040 to .062 in gauge will be reduced to a foil thickness as low as .00025 of an inch. Each mill will be a unit on its own baseplate, individually driven from a Ward-Leonard variable voltage control, and with automatic acceleration and deceleration.

Industrial Development of Texas

Under the caption of "Possibilities for the Industrial Development of Texas," Governor W. Lee O'Daniel has prepared an attractive booklet in which he makes some concrete suggestions for the promotion of this development. As the first edition of the booklet has been exhausted and in view of an increasing demand for copies, the Texas State Manufacturers Association, with the permission of Governor O'Daniel, is reproducing it.

Whitcomb Locomotive Appointments

The Whitcomb Locomotive Company of Rochelle, Ill., subsidiary of The Baldwin Locomotive Works, announces the following sales representatives: Edward M. Samson, formerly of the New York office of Electric Storage Battery Company, Philadelphia, appointed District Sales Manager, with offices at 120 Broadway New York; B. L. Beck, formerly with Fate-Root-Heath Company, appointed District Sales Manager, with offices at 1010 Pine Street, St. Louis, Mo.; John R. Heckman, formerly with Midvale, joins sales department of Whitcomb, operating from Chicago office at 627 Railway Exchange Building. These representatives will handle the complete line of Whitcomb internal combustion and electric powered locomotives in the construction, industrial and railroad fields.

Automatic Transportation Representatives

R. L. Wolter, Sales Manager, Automatic Transportation, Chicago, Ill., Division of The Yale & Towne Manufacturing Company, announces the appointment of E. H. Fairchild, 1935 Euclid Avenue, Cleveland, Ohio as Manager of Southern Sales. In addition to his new position, Mr. Fairchild will remain in charge of the Cleveland territory.

Areas covered by Southern offices and their managers are: Virginia, D. B. Parker, 1627 Westbrook Avenue, Richmond; North Carolina and South Carolina, F. L. Bunker, Box 1122, Charlotte, N. C.; Central Tennessee and Alabama, Haralson Sales Company, Inc., 211 South 18th Street, Birmingham, Ala.; Eastern Tennessee, Bert L. Sylar, 2501 Chamberlain

Avenue Chattanooga; Georgia, John W. Carlson, 242 Twelfth Street, N. E., Atlanta; Mississippi and Louisiana, L. E. Kenney, 314 Pan American Building, New Orleans, La.

Representatives of the company in other parts of the South are: Maryland, E. S. Goodloe, 2009 Eighth Street, N. W., Washington, D. C.; Kentucky and Western West Virginia, A. M. Batsner, 2642 Spring Grove Avenue, Cincinnati, Ohio; Southeast Texas, L. F. Chickering 202 North Drennan Street, Houston, Texas; remainder of Texas, D. P. Fletcher, 2205 Young Street, Dallas.

Products of the Automatic Transportation Company include industrial trucks, tractors and cranes, storage battery and gas-electric propelled.

Trade Literature

GLAZING AND PAINTING TOOLS, ETC.—
Red Devil Catalogue No. 17—illustrated, devoted to RED DEVIL Glass Cutters, Glaziers' Points, Glass Pliers, Wood Scrapers, Putty Knives, Electric Fencers, Electric Paint Conditioners, Painters' and Glaziers' Tools, Floor Sanding Machines, Axe and Hammer Wedges, etc.
Landon P. Smith, Inc., Irvington, N. J.

LUKENHEIMER VALVES, ETC.—
Catalog 78—illustrating and describing the complete line of Lukenheimer bronze, iron and steel valves; boiler mountings; lubricating devices; oil and grease cups, whistles, cocks, fittings, etc.
The Lukenheimer Company, Cincinnati, Ohio.

WIRE ROPE CLAMP—
Folder—devoted to the Safe-Line Wire Rope Clamp, claimed to offer the utmost in safety, security and simplicity.
National Production Company, Safe-Line Clamp Division, Detroit, Mich.

SOIL-CEMENT ROADS—
Manual—90 pages, telling how to build low-cost roads for light traffic by mixing roadway soil with Portland cement and water.
Portland Cement Association, 33 West Grand Avenue, Chicago, Ill.

LEATHER BELT DRIVE DATA—
Booklet—"Automatic Tension Control Short Center Pivoted-Motor Leather Belt Drive," illustrated, presenting the result of the cooperation of 46 manufacturers of leather belting and motor bases to produce a data book so that these newest and most modern of all short-center motor drives may be selected and priced as quickly as multiple V-belt drives; publication is planned and modeled after the standard V-belt drive data books and serves the same purpose.
American Leather Belting Association, 100 Gold Street, New York City.

DISK FILTERS—
Bulletin No. 1600—illustrated, devoted to International Disk Filters, their applications, operation and construction.
International Filter Company, 325 West 25th Place, Chicago, Ill.

AUTOMOTIVE EQUIPMENT, ETC.—
Catalog—covering the extensive line of automotive, portable and specialty equipment manufactured by—
The DeVilbiss Company, Toledo, Ohio.

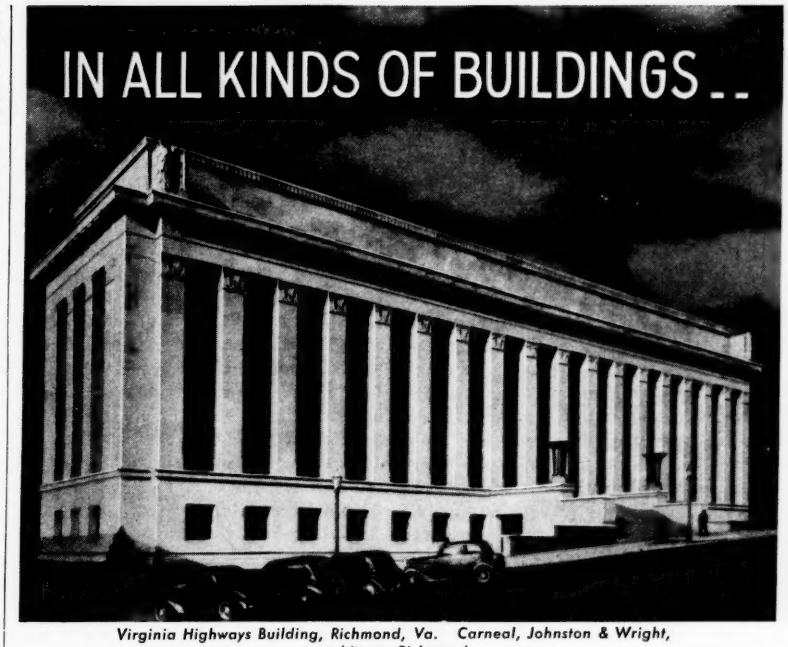
CONTRACTORS' EQUIPMENT—
Catalog No. 600—attractively bound and illustrated, covering in 56 pages details of CP equipment and tools for contractors, including compressors, rock drills, wagon drills, demolition tools, diamond drills, pneumatic tools, concrete vibrators, and electric tools.
Chicago Pneumatic Tool Company, 6 East 44th Street, New York City.

QUICK-USE CONCRETE—
Booklet—devoted to Modern Quick-Use Concrete made with Penn-Dixie High-Early-Strength Cement.
Pennsylvania-Dixie Cement Corporation, 60 East 42nd Street, New York, N. Y.

V-BELT FASTENERS—
Bulletin No. V-200—covering a new line of Alligator V-Belt Fasteners for "B," "C" and "D" section V-Belts; fasteners used only on crosswoven fabric V-Belts and should not be used to shorten or repair stretched out or broken endless cord V-Belts; bulletin shows how fasteners are applied and illustrates various types of applications.
Flexible Steel Lacing Company, Chicago, Ill.

DRAGLINES, SHOVELS, ETC.—
Bulletin No. PD-4—illustrating and describing Bucyrus-Erie Placer Dredges, covering mechanical and structural details with instructions for computing sizes and outputs; Bulletin No. 54-B1—devoted to Bucyrus-

(*Continued on page 60*)



Virginia Highways Building, Richmond, Va. Carneal, Johnston & Wright, architects, Richmond

ECONOMY by JOHNSON

COMFORT and CONVENIENCE, often, are the considerations which dictate the selection of *Johnson* automatic temperature and air conditioning control systems in buildings of every type. Architects, engineers, and owners, however, do not overlook the fact that ECONOMY is an inevitable by-product when *Johnson* apparatus is assigned to the job of watching over the heating, ventilating, and air conditioning plant. During most of the heating and cooling season, the outdoor temperature does not reach the extreme levels for which the systems must be designed. That's where *Johnson* control, automatic and efficient, comes in, "changing the size" of the installation to fit the variable conditions encountered each day.

In the new office building for the Virginia State Highway Department, a *Johnson* thermostat in every room operates in conjunction with the six winter air conditioning units. Provision has been made for adding cooling equipment to the existing installation, in the future . . . . Why do industrial plants and governmental agencies, national, state, and local, depend on "Control by Johnson", again and again, for new buildings and for installations which are being modernized? Johnson engineers can tell you. Pioneers in automatic temperature and air conditioning control, special problems of every sort, in all kinds of buildings, is "regular business" for them. In the regulation of space heating and conditioning and in the control of manufacturing processes, they have Johnson's modern, up-to-date, yet tried and tested, equipment to help them provide the right answer.

ASK A JOHNSON ENGINEER TO CALL. THERE IS NO OBLIGATION

JOHNSON

Automatic TEMPERATURE AND AIR CONDITIONING *Control*

JOHNSON SERVICE COMPANY: MILWAUKEE, WIS. AND DIRECT BRANCHES IN PRINCIPAL CITIES

Cotton in Construction

(*Continued from page* 19)

tests to the merits, practicability, and appeal of that idea.

The first demonstration cotton house, built at Northport, N. Y., more than five years ago, has in itself proven the soundness of the idea of using cotton duck over conventional wood sheathing in place of clapboards, shingles, brick, or stucco veneer. There has not been a single fault or failure of the fabric facing on the walls, which has remained securely in place without a wrinkle or blister in its surface. It has been found to be rain-proof and weather proof—quite unaffected by high summer temperatures or freezing winter weather. Since then other demonstration houses have been erected in others parts of the country under both private and public sponsorship. In point of appearance, the texture of the fabric-faced walls is pleasing, and, moreover, quite in keeping with the trend in modern architecture for flat, unbroken surfaces and for greater emphasis on functional design.

While it is true that in "cotton houses" of varying type erected to date the fabric has been applied on the job, it is more than likely that the greatest use of fabric for facing outside walls will come in its application at the plant producing prefabricated units, such as wall sections of, say, 4′ x 8′ size. For that possibility plywood panels appear to be in a vantage position. Even though the plywood may be manufactured by the hot press resin-bonded process to produce wall board that is permanently impervious to water or moisture, the fact remains that the outside wood ply, if exposed to the elements, will check and develop cracks. It is, therefore, not surprising, though highly significant and encouraging to the cotton-textile industry, that Lawrence Ottinger, president of the U. S. Plywood Corporation, the largest in the field, has endorsed without reservation the soundness, as well as the economy, of using a fabric facing on plywood to eliminate checking and grain raise and to provide a finish preferable to that of the wood. It is expected that from further experiments now in process, there will come in 1940 a commercial distribution of fabric-faced fir plywood cut to size for not only exterior and interior wall paneling, but also for applying to both flat and pitched roofs. By providing overhanging lips of fabric, which can be tightly lapped over joints with an adhesive, the troublesome problem of how to make watertight joints between prefabricated panels is easily resolved.

Low-cost, yet appropriately decorated, fabrics for interior walls of homes have been lately advanced by the development of a new permanent chemical finish that is both spot-proof and stain-proof. This material is now being given actual service tests in dwellings at various points throughout the country. Its use, however, is not alone in conjunction with the production of prefabricated units in that an inexpensive casein glue, newly developed, makes it feasible to apply the fabric on sufaces installed according to conventional construction methods.

To cite another use of cotton in connection with new developments arising from the emphasis placed on economy in construction of low-cost homes, there will be placed on the market early in 1940 a steel wire mesh lath with a cotton fabric backing. This new material will make it possible to provide in low-cost homes plaster walls and partitions with the fabric serving to hold satisfactorily in place the barest amount of plaster required until it hardens and "sets up." Moreover, it effects notable economies in labor costs. It is expected that this item will account for the consumption of approximately ten million square yards of coarse tobacco cloth in the first year.

It is not alone, however, in connection with low-cost housing that fabric faced walls will be erected. Roadside stands, hostels, motor camps, and cottages erected for seasonal occupancy at the seashore or in the mountains all offer wide possibilities for the employment of the pre-

(*Continued on page* 58)

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Offices: Birmingham, New York, Atlanta, Pittsburgh and New Orleans.
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Fabricators of: Structural steel bridges, buildings, tanks, general plate work, barges, towboats, large cargo vessels, passenger vessels, tankers and refinery equipment.
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Structural Steel for all Industrial Structures, Buildings and Bridges.
LARGE STOCK FOR IMMEDIATE SHIPMENT

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Any Type—Any Purpose—Any Capacity
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E. W. BACHARACH & CO.
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Tank Builders For Over 80 Years!

Another Recent Cole Installation—

A 200,000 Galloner!

This ovaloid tank of 200,000 gallons was built and installed by us for the city of Port St. Joe, Fla., the site of the new $6,800,000 paper mill.

●

Numerous cities and towns are being served by Cole Tanks including Charlotte, N. C. (million gallon tank); Mobile, Ala.; Gastonia, N. C. (million gallon); Spartanburg, S. C. (million and a half gallon); McPherson, Kan.; St. Petersburg, Fla.; Danville, Ky.; Daytona Beach, Fla.; Gainesville, Ga., etc.

● In addition to Water Tanks and towers, we also build tanks for acid, dye, fuel, oil, creosote, chemicals, etc., as well as other fabricated products of steel and alloy.

WRITE FOR "TANK TALK" NO. 28-D.

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ESTABLISHED 1854
NEWNAN GEORGIA

LANCASTER TANKS

Elevated Tanks	Bins
Pressure Tanks	Extractors
Steel Storage Tanks	Barges
Process Tanks	Dredge Pipe and Accessories
Butane—Propane Tanks	
Standpipes	Welded Pipe
Retorts	Riveted Pipe

General Steel Plate Construction designed for your requirements.

Lancaster Iron Works Inc.
Lancaster, Pa.

WOOD TANKS

Wood Stave Pipe

THE BALTIMORE COOPERAGE TANK & TOWER CO.
Baltimore, Maryland
The Largest Works of Its Kind in the South

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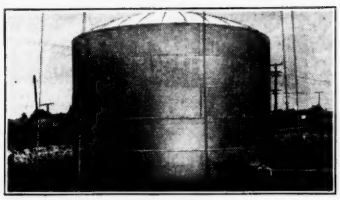
—WELDED OR RIVETED—

We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either

WELDED OR RIVETED CONSTRUCTION

This applies to field as well as shop built equipment.

Write us for information and quotations.



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YOUNGSTOWN, OHIO

DAVIS CYPRESS TANKS

Cypress tanks, which last indefinitely, meet all tank requirements, and we have been making and installing them for over 50 years, serving all industries. This experience is yours. Let us hear from you.

DAVIS CYPRESS TANKS

G. M. DAVIS & SON
P. O. Box 5, Palatka, Florida

South's Foreign Trade With South America

(*Continued from page* 38)

IMPORTS TO HOUSTON, TEXAS (TONS) — HOUSTON — EXPORTS FROM HOUSTON, TEXAS (TONS)

Miscellaneous	Petroleum & Products	Fibers & Mfrs.	Molasses	Coffee	Corn	Provisions	Total	to & from	Total	Provisions	Grain	Cotton	Petroleum Products	Metals & Mfrs.	Misc.
54	...	7	...	3,899	...	52	4,012	..Canal Zone ..	21,128	...	2,221	114	18,573	133	87
42	9,222	1,257	...	461	...	11	10,993	..Mexico	...	...	...	...	...	...	...
82	155,369	...	...	...	...	...	155,451	..Aruba	55,209	...	...	...	55,207	...	2
...	...	...	2,577	...	...	...	2,577	..Barbadoes	...	...	...	...	...	...	...
727	...	1,585	8,400	...	...	1,815	12,527	..Cuba	130,953	324	3,442	148	126,685	6	348
..	...	...	...	...	...	...	...	..Curacao	109,950	...	...	...	109,950	...	...
5	...	...	...	5	1,857	19	1,886	..Dominican R.	328	...	...	...	302	3	23
..	...	...	...	2	...	...	2	..Haiti	275	...	159	...	36	67	13
189	...	...	...	...	...	...	189	..Jamaica	...	...	...	...	...	...	...
600	1,200	...	2,802	...	...	...	4,602	..Trinidad	...	...	...	...	...	...	...
1,740	...	...	...	...	67,036	623	69,399	..Argentina	18	...	...	...	...	18	...
..	...	...	...	11,481	...	1	11,482	..Brazil	...	...	...	...	...	...	...
116	...	...	...	...	...	286	402	..Uruguay	...	...	...	...	...	...	...
1	...	...	...	1,325	...	...	1,326	..Colombia	977	...	...	257	267	381	72
..	...	...	2,821	...	...	...	2,821	..Br. Guiana	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	..Venezuela	450	...	...	...	450	...	...
..	...	...	...	...	...	...	...	..Peru	1,957	...	...	...	1,957	...	...
3,556	165,791	2,849	16,600	17,173	68,893	2,807	277,669	TOTALS	321,245	324	5,822	519	313,427	608	545

Baton Rouge, La.

Imports To Baton Rouge, La. (Tons)

Gas Oil	Distillate	Crude Petroleum	Total	to & from	Total
...	...	40,479	40,479	..Mexico	...
140,316	31,731	...	172,047	..Aruba	277,744
...	...	...	...	..Cuba	9,827
...	...	126,783	126,783	..Venezuela ..	...
...	...	...	...	..Peru	1,008
140,316	31,731	167,262	339,309	.. TOTALS	288,579

Exports From Baton Rouge, La. (Tons)

Crude Petroleum	Kerosene	Gasoline	Gas Oil	Petroleum Products
...	...	...	...	...
...	140,960	35,582	101,200	...
9,827	...	...	...	...
...	...	...	...	...
...	...	...	...	845
9,827	140,960	35,582	101,200	845

Port Arthur

Imports To Port Arthur, Texas (Tons)

Misc.	Crude Petroleum	Total	to & from	Total
15	...	15	Br. Honduras	691
105	...	105	Canal Zone	24,860
15	...	15	Costa Rica	1,436
162	...	162	Guatemala	3,156
31	...	31	Honduras	1,531
...	114,494	114,494	Mexico	...
50	...	50	Cuba	22,971
8	...	8	Dominican Republic ...	2,798
...	...	...	Guadeloupe	67
88	...	88	Haiti	1,448
766	...	766	Jamaica	4,016
...	...	...	Martinique	67
...	...	...	Trinidad	360
...	...	...	Argentine	83,602
1	...	1	Brazil	102,030
...	...	...	Uruguay	30,206
14	...	14	Colombia	1,479
...	...	...	Fr. Guiana	78
...	...	...	Surinam	78
...	19,873	19,873	Venezuela	...
1,255	134,367	135,622	TOTALS	280,874

Exports From Port Arthur, Texas (Tons)

Lumber	Roofing Paper	Petroleum Products	Misc.
...	...	691	...
57	...	24,774	29
...	...	1,436	...
...	5	3,151	...
...	...	1,520	11
...	...	...	...
36	...	19,020	65
2	...	2,779	3,867
...	...	67	...
...	...	1,448	...
658	102	3,220	36
...	...	67	...
...	...	360	...
2,224	163	81,190	25
...	82	101,862	86
...	28	30,157	21
...	...	1,467	12
...	...	78	...
...	...	78	...
...	...	...	...
2,977	380	273,365	4,152

EXPORTS FROM LAKE CHARLES, LA. (TONS)

LAKE CHARLES, LA. to	Total	Rice	Naval Stores	Cotton	Lumber	Crude Petroleum	Miscellaneous
Canal Zone	16	...	...	...	14	...	2
Cuba	10,110	754	...	...	...	9,356	...
Curacao	33,913	...	...	...	...	33,913	...
Dominican Rep.	172	...	47	...	125	...	...
Haiti	410	...	...	...	275	...	135
Argentine	2,987	1,191	1,638	146	...	...	4
TOTALS	47,608	1,945	1,685	146	414	43,269	141

The only import from South America and adjoining countries in 1937 was 27,139 tons of fertilizer from Chile.

EXPORTS FROM NEWPORT NEWS, VIRGINIA (TONS)

NEWPORT NEWS, VA. to	Total	Coal & Coke	Miscellaneous
Bermuda	6,872	6,871	1
Canal Zone	49,961	49,961	...
Antigua	412	412	...
Guadeloupe	1,979	1,979	...
Jamaica	17,241	17,241	...
Martinique	14,043	14,043	...
Trinidad	14,544	14,544	...
Argentina	4,557	4,274	283
Brazil	56,863	54,726	2,137
Uruguay	10,907	10,905	2
Surinam	2,969	2,969	...
Venezuela	40	...	40
Peru	3,499	3,499	...
TOTALS	278,692	276,229	2,463

The only imports into Newport News from the above countries in 1937 were 882 tons of provisions from Cuba, 85 tons of provisions and 9 tons of miscellaneous goods from Brazil, and 502 tons of miscellaneous merchandise from British Guiana. Among the miscellaneous exports shown above, 2,137 tons were for chemicals for Brazil and 200 tons of lumber for the Argentine.

From nearby Hopewell in Virginia was exported 3,000 tons nitrate of soda.

EXPORTS

GULFPORT, MISS. to	Total	Naval Stores	Lumber	Miscellaneous
Cuba	305	...	305	..
Argentina	18,752	436	18,302	14
Venezuela	579	...	579	..
TOTALS	19,636	436	19,186	14

Gulfport's imports in 1937 consisted of 2,021 tons of asphalt from Trinidad and 28,630 tons of fertilizer from Chile.

EXPORTS

BRUNSWICK, GA. to	Total	Naval Stores	Lumber
Argentina	2,108	2,005	103
Brazil	317	317	...
Uruguay	11	11	...
Chile	183	119	64
TOTALS	2,619	2,452	167

The only imports received at Brunswick, Georgia in 1937 consisted of 1,094 tons of sugar from Cuba.

EXPORTS FROM CORPUS CHRISTI, TEXAS (TONS)

CORPUS CHRISTI, TEX. to	Total	Petroleum and Products	Caustic Soda
Aruba	4,751	...	4,751
Cuba	9,575	9,575	...
Curacao	11,918	11,918	...
TOTALS	26,244	21,493	4,751

EXPORTS FROM BEAUMONT, TEXAS (TONS)

BEAUMONT, TEXAS to	Total	Lumber	Petroleum and Products	Miscellaneous
Canal Zone	187	156	...	31
Guatemala	8,242	...	8,241	1
Honduras	10,333	...	10,333	...
Cuba	12,964	2,411	10,335	218
Dominican Rep.	105	105	...	...
Haiti	2,706	2,706	...	...
Argentine†	65,422	...	65,422	...
Colombia	535	...	...	535*
TOTALS ...	100,494	5,378	94,331	785

†From Argentine was imported 3,445 tons of corn in 1937—Beaumont's only import from South America.

***Includes 517 tons of metals and manufactures.**

Besides the ports for which statistics are given above, there were several other Southern points visited by vessels for small quantities of imports and exports in 1937.

Apalachicola, Florida, exported 845 tons of lumber to Cuba; Carrabelle, Florida, exported 1,568 tons of merchandise, all but 8 tons being lumber for shipment to Barbadoes (18 tons), Guadeloupe (82 tons), and Trinidad (1,460 tons); the remaining 8 tons was miscellaneous merchandise for Guadeloupe.

Though exports from Key West,

(*Continued on page* 60)

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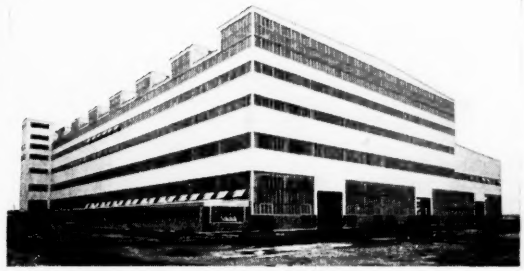

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South America's Exports to Germany and the United States

(*Continued from page* 21)

Commodity	*Exported to Germany*	*Exported to U. S.*
Coffee	$8,065,525	$44,149,075
Bananas	1,048,225	2,878,450
Cattle hides	733,700	339,250
Crude platinum	250,125	1,157,475
Leaf tobacco	197,225	.....
Dividivi	98,900	.....
Goat and sheep skins	10,350	144,325

In comparison with the $10,703,000 worth of Colombian goods imported into Germany in 1937, the value of imports for 1938 and the first six months of 1939 amounting to $18,743,000 and $9,567,000 respectively, represent a large increase. Statistics concerning these recent imports include: 34,181 tons of coffee, $10,637,000, and 41,884 tons of southern fruit, $5,130,000, in 1938; and 11,745 tons of coffee, $3,787,000, and 25,561 tons of southern fruit, $3,133,000, during the first six months of 1939.

MEXICO

Mexican exports to Germany have been climbing steadily upward for several years and the 1937 figure of $23,278,000 was surpassed in 1938 by $1,739,000, making a total for that year amounting to $25,017,000. Had it not been for the war, 1939 would probably have shown a similar increase; for the first six months of this year the total was $13,701,000. The principal commodities involved together with quantity and value, were as follows:

Commodity	1938 *Tons*	1938 *Value*	6 *mos.* 1939 *Tons*	6 *mos.* 1939 *Value*
Coffee	10,523	$3,696,000	2,249	$797,000
Edible peas	6,123	354,000	1,136	50,000
Raw cotton	9,636	2,989,000	4,397	1,285,000
Sisal	6,431	768,000	2,938	294,000
Turpentine and resin	2,207	187,000	2,673	213,000
Crude oil	198,184	2,887,000	223,844	2,149,000
Dresel oil	136,499	3,208,000	147,179	2,772,000
Uranium, molybdenum, titanium and vanadium ore	3,515	590,000	1,762	256,000
Fuel oil	54,582	953,000	180,768	2,348,000
Crude lead	42,616	3,333,000	7,790	564,000

PERU

German purchases from Peru in 1937 comprised the latter country's third largest exports with $12,580,000, being exceeded only by the United Kingdom and the United States whose imports were $20,965,000 and $20,422,000 respectively. The most important German imports together with their value and corresponding figures for the United States were:

Commodity	*Exported to Germany*	*Exported to U. S.*
Animal products, total	$1,892,970	$1,062,860
Alpaca wool	284,430	714,210
Sheeps wool	1,005,100	.....
Vegetable products, total	5,086,300	.....
Raw cotton	4,883,570	.....
Gasoline	1,814,690	.....

In 1938 however, Peruvian exports to Germany totaled $15,546,000 but dropped to $5,266,000 for the first six months of 1939. Chief among the commodities since 1937 were:

Commodity	1938 *Tons*	1938 *Value*	6 *mos.* 1939 *Tons*	6 *mos.* 1939 *Value*
Raw cotton	14,345	$5,450,000	5,804	$2,173,000
Gasoline	81,953	2,390,000	41,210	983,000
Lead ore	18,373	1,515,000	2,600	131,000
Crude lead	8,449	717,000	3,345	243,000

OTHER COUNTRIES

Country exporting to Germany	1937	1938	6 *mos.* 1939
Costa Rica, total	$2,240,000	$4,473,000	$1,942,000
Cuba, total	3,136,000	3,376,000	1,380,000
Hides, skins, furs (undressed)	.....	1,299,000	578,000
Dominican Republic, total	589,000	1,186,000	593,000
Ecuador, total	3,273,000	3,911,000	1,438,000
Cacao	.....	3,024,000	817,000
Guatemala, total	2,803,000	5,834,000	2,066,000
Coffee	.....	4,930,000	1,018,000
Haiti, total	374,000	308,000	176,000

(*Continued on page* 60)

The Real Story of Cotton Mill Life

The real story of life in a southern cotton mill village has now been told. In "Faces We See," Mildred G. Barnwell presents a series of remarkable photographs, all taken from real life, showing just how the employees spend their leisure time; just what community facilities are provided for them by the mill companies; and just what the jobs of these people inside the mill are. The text which accompanies the photographs is brief, interestingly written, and factual.

The combination of the text and pictures represents a complete answer to the many distorted stories of living and working conditions in southern mills which have appeared in recent years.

Mrs. Barnwell's book consists of three main chapters, each containing a series of photographs. Chapter 1—"Southern Mill Folks"—tells the story of the background of the southern mill workers, of the social transformation which followed the trek of so many thousands from mountain to mill. Then the pictures in this section show just hiw these people live today — what they do with their leisure time, and what facilities for living the mills provide for them.

The second chapter, "From Bale to Bolt," takes the layman through a cotton mill, showing him every step in the various processes.

The third chapter, "Meet the Reeses," completes this pictorial journey by going behind the scenes with one actual mill family, and portraying the events of a day in the life of that family.

Finally, a fourth section, "Combed Yarn Mill Facts," gives the reader additional information on the industry itself: where its money goes, how its wage rates stand, the background of labor legislation in North Carolina, etc.

The photographs were taken by Bill Baker, of the North Carolina Department of Conservation and Development, under the direction of Mrs. Barnwell. The negatives are on file with the News Bureau of that Department, at Raleigh, N. C., and copies may be had upon request.

Faces We See, by Mildred G. Barnwell; published by Southern Combed Yarn Spinners Association, Gastonia, N. C. Price $3.00.

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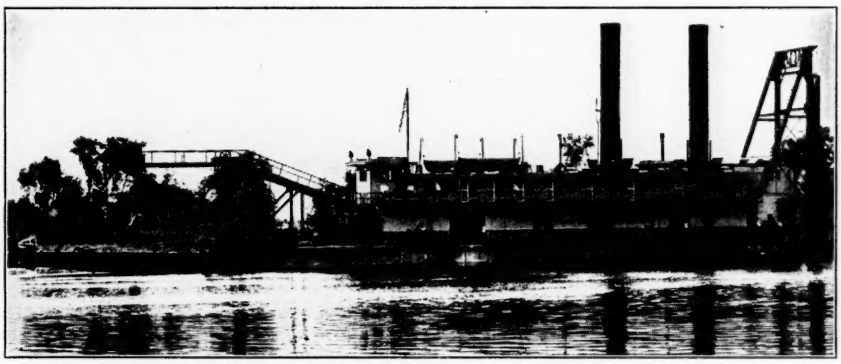

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Southern Ships for Southern Trade

(*Continued from page* 17)

economically due, in large part, to the high standard of living conditions and wages required for American crews. To circumvent this situation and meet the competitive freight rates of foreign ships, the Mississippi Shipping Company has planned this ship, and particularly its holds, with a view to carrying a well distributed yet balanced variety of cargo commodities in such quantities of each, that their varying rates would make a composite whole so as to permit the economical, if not profitable operation of the ship in continuous trade over the route for which she is designed. Therefore, the entire arrangement of holds, 'tween decks, and hatches was agreed upon only after intensive studies of the cargo usually carried on this trade route and the arrangement is such as to permit very rapid loading and discharging.

The cargo space is divided among six holds, three on the forward deck and three on the after deck, each being subdivided with an upper and lower 'tween deck.

Number four hold on the after deck and immediately abaft the midships deck houses, will be provided with two refrigerated cargo compartments in the 'tween decks having a capacity of approximately 10,000 cubic feet. Also located in the 'tween decks will be a strong room for the transportation of valuable cargo while the entire hold, including the 'tween decks, will be mechanically ventilated throughout so as to take adequate care of such special cargoes as may require this type of protection. The winch capacity is somewhat higher than customary, owing to the fact that considerable quantities of heavy machinery, tractors, and road building equipment are carried by the vessels of the Delta Line. The speed of the winches is also high in order to facilitate the rapid discharge of coffee cargoes at the Port of New Orleans. Each hatch will be fitted with two 50 horsepower high speed electric winches with the exception of No. 2 which will be supplied with four winches. There will be a steel cargo boom for each winch and in addition, a 30 ton heavy lift cargo boom at No. 2 hatch. Weather deck hatches are fitted with "Tutin" steel hatch covers which permit the very rapid opening and closing of hatches, thus minimizing the loss of time usually occasioned by this operation.

The passenger and crew accommodations are located amidship beginning about 175 feet from the bow and extending for about 180 feet toward the stern. The passengers' dining room, with a seating capacity of approximately 80 persons, is on the main deck in the forward part of the space devoted to passengers' quarters. This dining room will be completely air-conditioned in hot weather and mechanically ventilated with warm air in cold weather. Aft of the dining room and on the same deck there is the galley, pantry, laundry, linen rooms, ship's refrigeration stores, doctor's and purser's state rooms, engineer offices, steward department personnel, and messrooms for officers and crew. On the shelter deck, which is the next deck above the main deck, are the passengers' state rooms, passengers' hospital, barber shop, purser's office, and baggage room. The main entrance where passengers will board the ship is also located on the shelter deck and leads into a foyer. From this foyer handsome stair cases lead down to the dining room and up to the public rooms on the bridge deck above. Both stair cases and public rooms are generously decorated with interesting murals depicting scenes of the country for which the ship is named—Brazil.

On the bridge deck, forward, is the passengers' lounge, with the veranda cafe, bar, and smoking room all located on the after end. These enclosures are surrounded by the promenade deck and there is an ample game deck extending the entire width of the ship, immediately abaft the veranda cafe. Number 4 hold, which is located in the center of this game deck, has been fitted with hatch covers that are flush with the deck, thus preserving an almost unbroken surface for deck sports.

On the boat deck, next above the bridge deck, is a tiled, open air swimming pool with an attractive sun deck arrangement partly covered by awnings. On the forward end of this deck is the wheel house, chart room, captain's office and state room, wireless room, gyro room and state rooms for the deck officers and wireless operators.

The deck and engine room unlicensed personnel will be quartered in the after part of the vessel on the main deck. Not more than three men will be berthed in one room and there is also provided a large recreation room for the exclusive use of the unlicensed personnel containing writing tables, radio, library, and lounge chairs.

The present vessels of the Delta Line have established an enviable reputation for comfort in the American style. The furniture and fixtures of the new vessels have been chosen to maintain this reputation and at the same time to provide the utmost in safety, fire proofing, and appearance. In the main lounge there will be deep soft chairs and sofas and the decorations have been planned with a view of providing the utmost in comfort and quiet dignity. The veranda cafe, in a somewhat lighter vein, has a dance floor and in an alcove on each side will be the bar and smoking room. The state rooms will be finished and furnished in a pleasing style and will be fitted with steel furniture, ample wardrobe space, whose doors open to form a full length triple mirror, and soft lighting effects. Each state room will have a private bath fitted with a hot and cold fresh water shower. The forward rooms on each side are so arranged that they can be sold "en suite" with bed rooms and large sitting rooms. Other rooms will be fitted with single beds and some rooms will have disappearing type pullman berths which when not in use will be recessed into the ceiling.

The machinery will embody modern engineering principles and the main propulsion machinery will consist of General Electric turbine with double reduction gears developing 8,600 horse power at full power. Steam will be supplied by two Babcock and Wilcox boilers operating at 450 pounds pressure with a total steam temperature of 750 degrees. The main condensers which are being built by the Bethlehem Steel Company, Shipbuilding Division, will be located immediately below the main turbine. The vessel is expected to maintain her service speed of 16½ knots on approximately 7800 horse power, thus leaving an adequate margin of reserve power so that the schedule can be maintained under practically any adverse weather conditions encountered on the route. The auxiliary machinery has been selected for ruggedness and durability and economy of operation. There will be a number of electrically driven auxiliaries and some steam driven pumps. The vessel will be driven by a single screw running normally at approximately 105 R. P. M.

The latest devices for safe and efficient navigation will include a Sperry gyroscopic compass, automatic steering, radio direction finders, and the most up-to-date fire detecting and extinguishing systems. Although not strictly required under current rules, the vessel has been designed so that even if an accident should occur which would result in the flooding of any two adjacent compartments, the vessel would still remain afloat and have a high degree of stability. It will comply in all respects with the provisions of the International Convention for Safety of Life at Sea and with the recommendations of a special Senate Committee which a few years ago, with the aid of experts in naval architecture, made a thorough study of safety at sea.

As previously mentioned, the S. S. DELBRASIL and her sister ships will be operated between the U. S. Gulf Ports and the East Coast of South America. The principal ports served in the Gulf are Pensacola, Mobile, Houston, Galveston, and New Orleans, from which latter port vessels will sail direct to Rio de Janeiro, Brazil. After Rio de Janeiro, calls will be made at Santos, Brazil and possibly Montevideo, Uruguay. The southern terminal port will be Buenos Aires, which according to present plans,

(*Continued on page* 58)

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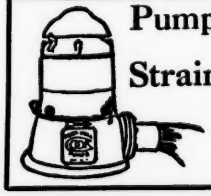

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Of all equipment, wells and pumps should be most dependable. Shut-downs for repairs are very expensive. Layne appreciates the value of uninterrupted service and builds its water supply and pumping systems to give maximum trouble-free service. Quality is not sacrificed to reduce prices or meet cheap competition.

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LAYNE

PUMPS & WELL WATER SYSTEMS

For Municipalities, Industries, Railroads, Mines and Irrigation

Chemurgic Plastics

(*Continued from page* 23)

plastic production. It has been stated that the United States has a potential annual supply of skim milk of 40 billion pounds more than is new converted into manufactured products. This means that approximately a billion pounds of milk casein can be made available to American manufacturers for conversion into fiber or plastics.

The problems that face the plastic producer cannot be solved in the chemical laboratory alone. The manufacturer must secure the cooperation of the producers of his raw materials, agricultural and industrial engineers, machinery manufacturers and distributors of goods in almost every consumer field.

First of all, the manufacturer must assure himself an adequate supply of raw materials for his molding powders. The American farmer is prepared to produce the wood and cotton linters for cellulose products, the lignin, the milk casein, the soybeans, the corn, the potatoes, the grains, the oils, and all the other farm crops needed by plastics manufacturers.

A problem that has long beset those who wish to use some of our most common agricultural products in industry is that of economically gathering the raw materials. For instance, corn stalks and grain straws are excellent sources of cellulose, but a log of wood provides a more economical package than a shock of corn or even a bale of straw. It is up to the agricultural engineers to remedy this problem.

Plastics have for the most part been limited in use to small but complicated articles, because it has been found nearly impossible to produce large sheets of plastic material. The building trades are ready to use large pieces of plastic materials in constructing "factory made" houses. The industrial engineer must find methods of producing presses sufficiently large and powerful to produce the required sheets. Laminated plastics —sheets of paper or plywood bonded together by synthetic resins—are coming rapidly into use. Already sheets eight by twelve feet have been produced. Airplane bodies strong as steel, lighter than steel, fireproof, impervious to the elements, are now being manufactured experimentally on both coasts. If the industrial engineers will continue their successes, it is not impossible that some day we shall be riding in airplanes and automobiles with bodies made of plastics and live in homes the walls of which have been stamped out in the plastics factories of the nation.

The enormous demand by the consuming public for plastic products—radio cabinets, dresser sets, scales, even furniture—would seem to indicate that plastics have fully been accepted. Yet the educational program must be maintained. As in the case of rayon, which, incidentally, has been called a plastic product, the consumer must be made to realize that plastics are not a "substitute" for a better product, but are fully worthy of acceptance on their own merits as quality products necessary to modern living.

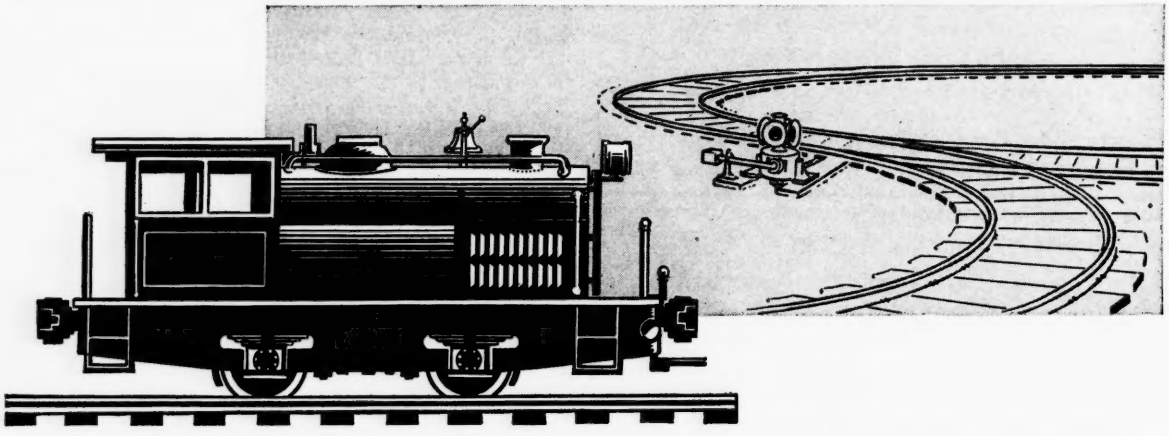
The primary need of the plastics manufacturer is to continue the research work in his own or other laboratories. Research, and more research, made the development of plastics possible in the first place. Research will lick the problems that beset the industry, even though it may take years of seemingly fruitless labor.

One important point must be kept in mind. Many plastics have proved their worth in the laboratory. Their economic values must be carefully investigated to avoid too-hasty promotion.

As Dr. George H. Brother of the United States Regional Soybean Industrial Products Laboratory has said:

"It is both difficult and risky to attempt to predict the future especially in reference to business or industry, but if anything is a safe bet, it is a steady increase in the application of farm products to the plastics industry. Chemical research has just started in this field, and . . . no one can deny the fact that the preliminary

(*Continued on page* 60)



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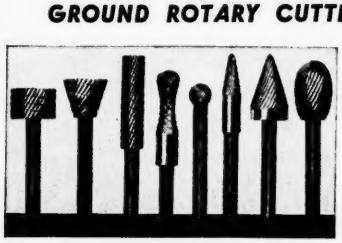

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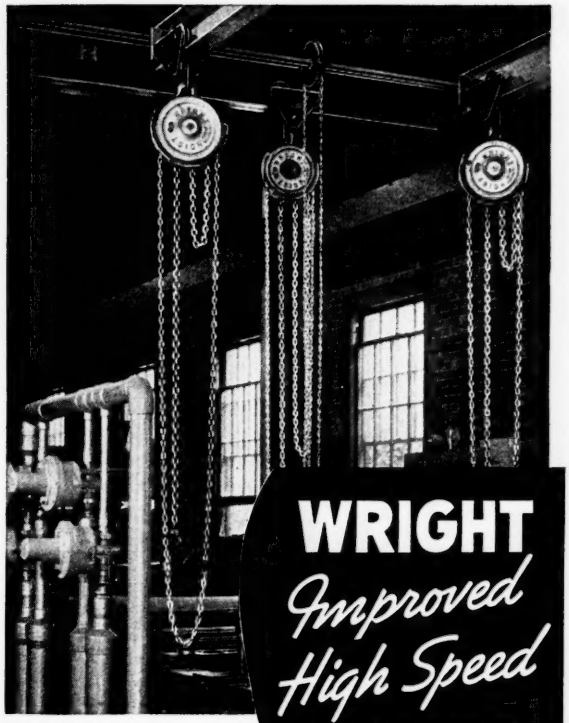

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ACCO TRADE MARK

AMERICAN CHAIN & CABLE COMPANY, Inc.
In Business for Your Safety

Thrift is Better Than Taxation

(*Continued from page* 27)

accept it. Give battle and not bread, and at the end of the battle there will be plenty of bread.

Life is made up of two things—hope and memory. When we have the most of one we have least of the other. Successful living is to convert from day to day high hope into happy memory.

With youthful struggle there is hope that will make memory a storehouse of everlasting happiness.

The right kind of youth, and there are millions of them who like to face a storm, climb a hill and have a fight. It's all so thrilling, life-giving, glorious!

Challenge them and see!

Air Conditioning in the South

(*Continued from page* 32)

pules are filled with snake venom and other serums for medicinal purposes, cleaned air has reduced the number of waste products by 66 per cent.

Tobacco which is next to the largest agricultural crop of the South, from the point of value, is using a large quantity of conditioned air. As early as 1911 an installation was made for a stemmery in Richmond. American Tobacco Company, P. Lorillard and Company, Liggett and Myers, and R. J. Reynolds are among the companies located in North Carolina, Virginia, and Kentucky which utilize air conditioning throughout the entire process of manufacture, from the storage of hogshead, to the storage of the waterproof wrapped package. Tobacco will break and crack when exposed to dry air. From the standpoint of meeting manufacturing schedules and maintaining high uniform quality, air conditioning is important to the tobacco industry. U. S. Tobacco Company recently contracted for a large air conditioning and refrigerating system for its new building in Richmond, Virginia. Modern in every detail, it is the first building devoted exclusively to pipe smoking tobacco to be completely year 'round air conditioned.

Probably no installation of air conditioning has created as much interest as the one recently installed for the Woodward Iron Company of Birmingham, Alabama. The apparatus and size of the equipment are both noteworthy. For years studies have been made to improve pig iron. As far back as 1880 there were attempts made to control the moisture content of the "blast" but not until the installation was made at Woodward has the blast been truly air conditioned. It is the first time that its moisture content is controlled throughout the year. There are 50,000 cubic feet of conditioned air a minute supplied to one blast furnace which produces 500 tons of commercial iron per day. The refrigerating machine, with a capacity of 585 tons, supplies 1200 gallons of water a minute to the dehumidifier which conditions the "blast" air.

The results obtained are definite. They are (1) greater uniformity of product, (2) reduced coke consumption and (3) increased production.

But installations have not been limited to industrial concerns, since air conditioning for comfort alone is outstanding in the South. The Canal Bank Building and the Municipal Auditorium of New Orleans, Louisiana, the Haverty Furniture Store of Birmingham, the George Washington Hotel of Jacksonville, Florida, and the Trust Company of Georgia, Atlanta, Georgia are only a few of the many installations where comfort of employees and customers has been the primary consideration.

The industrial South has truly applied the art of living to its mills and factories, and hotels, office buildings and public assembly halls.

WATER CONDITIONING, STEAM SPECIALTIES, ETC.—
Office Publication—"Cochrane News," for September-October, 1939.
Cochrane Corporation, Manufacturing Engineers, 17th Street and Allegheny Avenue, Philadelphia, Pa.

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Like this one at Milledgeville, Ga., Frick Saw Mills offer the advantages of faster, more accurate work because equipped with patented belt feed, pressure lubricated roller bearings, cut steel rack bars, set works adjustable to 1/32", and numerous other superior features.
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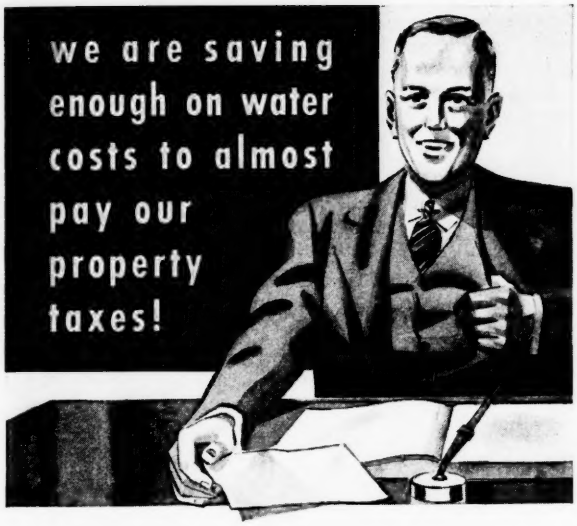

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High water rates and high property taxes were serious obstacles to profits for a midwestern manufacturer. Nothing could be done about taxes. But something was done about water rates.

A well driller determined there was water of proper analysis on the property. His recommendation to install a Deming Deep Well Turbine Pump was accepted. The installation was made two years ago.

An average annual net reduction of 42% was made on water costs . . . almost sufficient to pay the company's property tax!

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. . . which illustrates and describes all features of Deming Water Lubricated Deep Well Turbine Pumps with illustrations of many installations.

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Cotton in Construction

(*Continued from page* 46)

fabricated units as well as another type of construction employing cotton that is also in course of development. For those cases where completely finished appearances are not essential to comfortable accommodations, as in the case of hunting lodges or fishing camps, it has been found that canvas affixed to frames, either prefabricated or installed on the building job, is eminently satisfactory. Several demonstrations of this type of construction have attracted widespread notice, especially since the perfection of a permanent flame-proof, fire-resistant finish for canvas.

Another new use for cotton in the construction industry, which has been proven practical and deserving of consideration and attention on a much broader scale than attained in recent years, is in the application of sheeting for the restoration and repair of roofs in conjunction with asphalt. Several of the important manufacturers of roofing materials have been successful in promoting this use for cotton in competition with better-known materials. It is notable that in recent months asphalt saturated cotton fabric has been employed on several new construction jobs where economy was a controlling factor.

The use of cotton in housing is not confined to textiles in that satisfactory low-cost insulating material, made of an equal mixture of cotton linters and low-grade cotton lint, will likely be marketed commercially soon after the beginning of the new year. For this new product superior insulating qualities have been established, as well as a low cost that gives it a favorable price differential over mineral materials already in use. The development of this product represents the fruition of unceasing effort to impart to the cotton fibre fireproof qualities and yet preserving its low density character—and is, indeed, typical of the painstaking perseverance accounting for the advances to date in establishing the usefulness of cotton in housing and construction.

It is fitting and perhaps prophetic of "construction of tomorrow" that in the WORLD OF TOMORROW at the New York World's Fair this year there were 75,000 to 80,000 square yards of cotton fabrics used for protecting the shelters afforded in numerous of the important buildings.

Southern Ships for Southern Trade

(*Continued from page* 52)

will be reached on the 19th day after departure from New Orleans. It is expected that discharging and loading at Buenos Aires will require approximately eight days, after which the vessel will return to New Orleans via Santos and Rio de Janeiro, Brazil. On the northbound voyage it is contemplated that the vessels will remain at Santos for two or perhaps three days, then one day at Rio de Janeiro, which will permit round trip passengers to visit the principal points of interest in Santos, Sao Paulo, and Rio de Janeiro, Brazil. The entire round voyage is expected to be made in about 47 days.

The vessels were designed by Mr. V. M. Friede, Naval Architect of New Orleans, who in developing the design and arrangements worked in close collaboration with the traffic and operating officials of the Company at New Orleans. Mr. Friede was in charge of the reconditioning of the Company's steamers DELMUNDO and DELVALLE, on which passenger accommodations were installed at Newport News in 1932. The supervision of construction of the new vessels is also being handled by Mr. Friede and staff.

CONSTRUCTION MACHINERY— Catalog—devoted to CMC Non-Tilt and Tilting mixers, side or end discharge, new end discharge 3½S Tilting Trailer, a recent CMC addition; self-priming pumps, builders' hoists, plaster and mortar mixers, power saw rigs, concrete carts and wheelbarrows, and other items of construction equipment.

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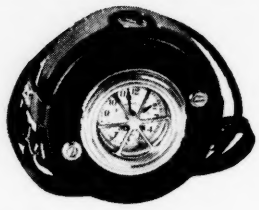

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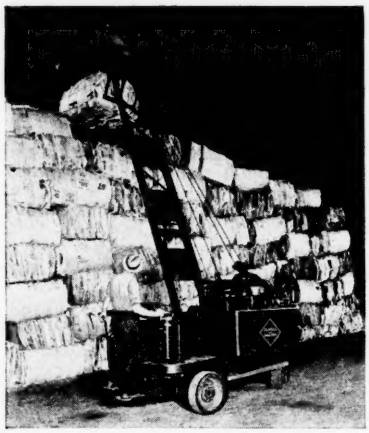

Corporations locating or expanding great industrial projects in the South have installed Elwell-Parker Equipment as a *further* means of maintaining low manufacturing costs—i. e., *increasing profits.*

Iron and Steel, Pulp and Paper, Chemical, Textile and other huge typical Southern developments are employing whole *Systems* of Elwell-Parker Trucks, Tractors and Cranes. Savings are so great as to quickly amortize original costs and continue paying net dividends.

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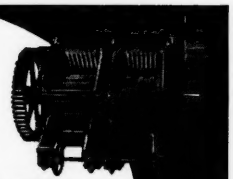

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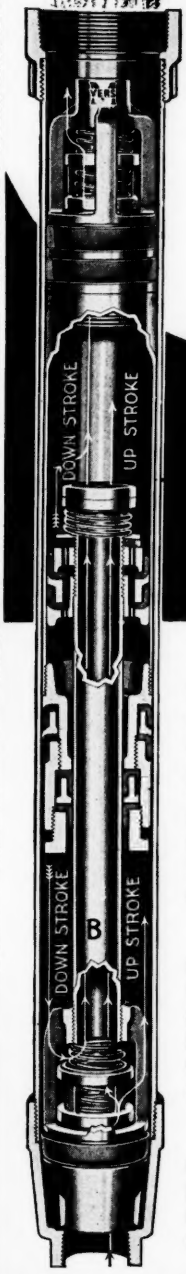

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PUMPS—WATER SYSTEMS—HAY TOOLS—DOOR HANGERS

South America's Exports to Germany and the United States

(*Continued from page 50*)

Honduras, total	130,000	1,032,000	40,000
Nicaragua, total	1,504,000	1,441,000	578,000
Panama, total	103,000	163,000	68,000
Paraguay, total	1,448,000	1,078,000	579,000
Quebracho wood	.....	69,000	.....
El Salvador, total	1,731,000	2,979,000	958,000
Uruguay, total	7,283,000	15,387,000	8,900,000
Meats	.....	2,599,000	1,410,000
Hides, skins, furs (undressed)	.....	3,331,000	2,111,000
Venezuela, total	5,977,000	12,196,000	4,277,000
Cacao	.....	1,693,000	1,050,000
Crude oil	.....	3,309,000	698,000
Curacao, total	.....	31,132,000	11,783,000
Gasoline	.....	10,571,000	4,529,000
Lubricants	.....	2,152,000	601,000
Fuel oil	.....	2,684,000	910,000

The South's Foreign Trade With South America

(*Continued from page 48*)

Florida, amounted to only 12 tons of miscellaneous goods for Cuba, imports totaled 1,427 tons. The latter comprised 56 tons from Nicaragua including 51 tons of turtles, 1,344 tons of miscellaneous goods, principally fruits (952 tons) and sugar (323 tons), and 27 tons of turtles from Grand Cayman.

Another Florida port, Panama City, imported 619 tons of bananas from British Honduras, but exported a total of 8,104 tons of merchandise including 2,818 tons of non-metallic minerals to Cuba, 4,951 tons of the same commodity to Argentina and 335 tons of fertilizer to Chile.

Port Sulphur, Texas, exported 3,350 tons and 2,800 tons of sulphur to Mexico and Argentina respectively, while 1,998 tons of the same product were sent to Mexico from Freeport, Texas.

From Orange, Texas, was shipped 773 tons of lumber to Mexico; and Texas City exported coke in the amount of 501 tons to Cuba and 7,100 tons to Brazil. Texas City also imported 11,700 tons of Cuban sugar.

Chemurgic Plastics

(*Continued from page 54*)

results look at least hopeful. A great deal more work remains to be done: much of it is fundamental research which is neither spectacular nor rapid, but if it is undertaken and conducted in a steady, efficient manner, the results amassed over a period of years will be impressive."

That the outstanding potential source of raw materials for plastics manufacturers is the American farm is readily evident. The farmer is prepared to undertake this part of the job of providing Americans with chemurgic plastics — those made from agricultural raw materials.

New Sound and Color Film of the South

(*Continued from page 31*)

white man, "The New South" introduces four famous Southern farm experts who point out the need for more scientific farming. The importance of self-containment to the South is pointed out, especially in times of war.

Later scenes in the picture include sequences showing the production of Arcadian Nitrate from the raw materials. The film closes with a tribute to the Southern farmers, and a salute to the future of Southern agriculture.

The programs distributed to farmers and others attending the showings say: "It is the hope of the distributors of Arcadian that this picture will serve to bring home to the farmers of the South the significance of the production of their necessary fertilizer within our own borders, and to indicate what may be expected in the future."

Trade Literature

(*Continued from page 45*)

Erie Model 54-B Diesel Shovel and Dragline; Bulletin No. DL-1—devoted to Bucyrus-Erie Draglines, with mechanical and structural detail; Bulletin No. 33B-3—illustrating and describing modern improvements in the Bucyrus-Erie 33-B, 1¼-yard shovel, dragline, clamshell, crane; Bulletin No. D-1007—devoted to the improved Bucyrus-Erie 100-B, 4-yard electric shovel and dragline. **Bucyrus-Erie Company**, South Milwaukee, Wis.

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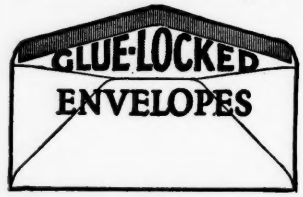

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3 and 2 phase, 60 cycle, 220 or 440 volts

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60	H.P.	G.E.	900	R.P.M. $325.00
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Butler batching plant, 5 compts., capacity 105 yds. aggregate, 200 bbls. cement, etc. Complete.
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Sullivan air compressor, 850 cu. ft., 100#, electric.
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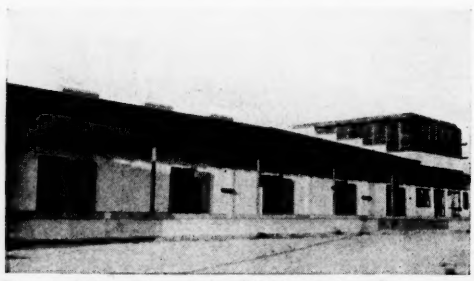

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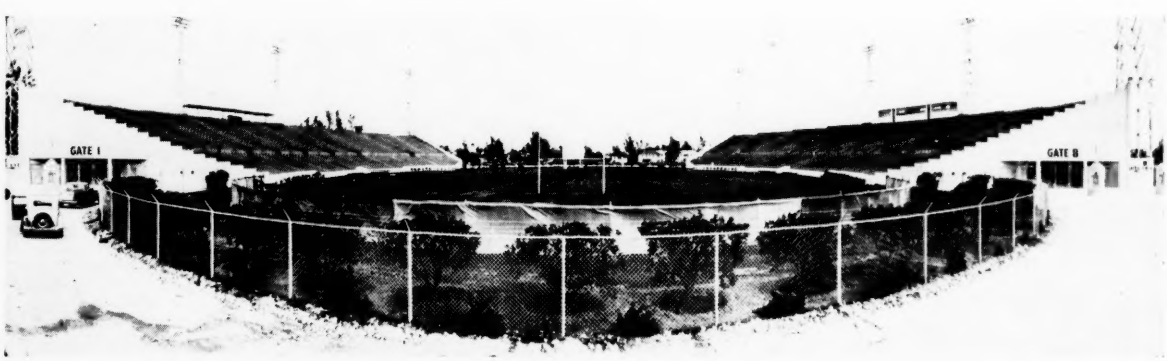

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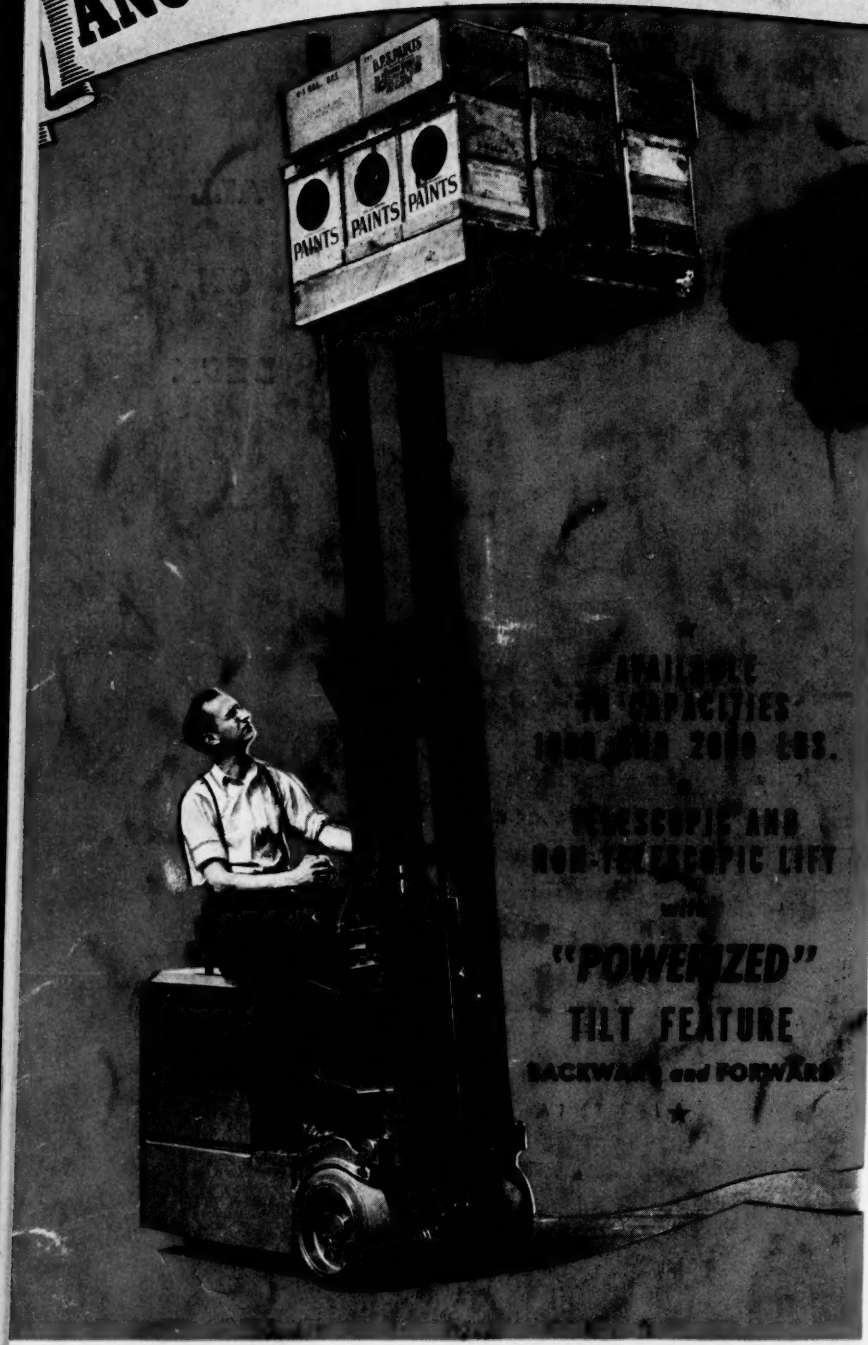

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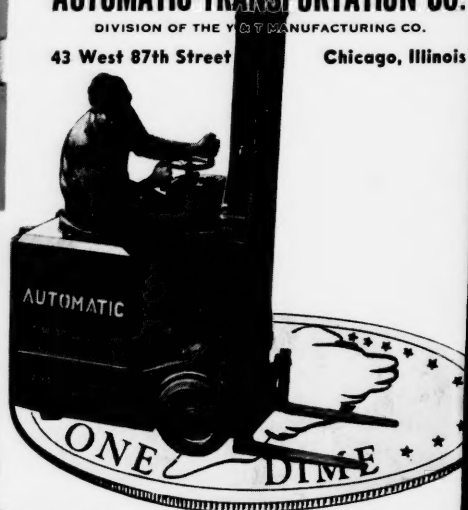

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